NAVAL POSTGRADUATE SCHOOL
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THESIS

AN ANALYSIS OF PEACETIME MEDICAL WORKLOAD AND STAFFING: SHOULD MEDICAL READINESS BE VIEWED THROUGH A PEACETIME LENS?

by

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March 2003

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There is concern that the current approach to the peacetime medical mission of Navy Medicine does not adequately address the need to provide its personnel with the skill sets necessary for the surgically intensive environment associated with the wartime mission. Navy Medicine has shifted its focus on the delivery of health care over the last decade from treatment and intervention to prevention, health promotion and population health initiatives. This focus makes good business and clinical sense from the managed care and population health perspective. This thesis examined Navy Medicine's inpatient and outpatient surgical workload and military staffing to determine the level of support it provides for the readiness mission. A trend analysis was performed using workload data from the Medical Expense and Performance Reporting System between fiscal year 1999 and 2002. This analysis shows that there has been an overall decrease in the amount of inpatient surgical workload for all surgical specialties. However, not all surgical specialties have observed an increase in outpatient workload over this same time period. Additionally, an examination and trending of end strength data for the Medical Corps and Nurse Corps using primary subspecialty codes was performed for fiscal years 1990 through 2002. The results indicated that while there have been few changes in overall end strength over the last decade, changes in specialties have occurred consistent with an emphasis on a medical model that focuses on outpatient primary care. The evidence suggests an emerging gap between the dual missions of Navy Medicine that warrants further investigation as to its potential impact on medical readiness.

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AN ANALYSIS OF PEACETIME MEDICAL WORKLOAD AND STAFFING: SHOULD MEDICAL READINESS BE VIEWED THROUGH A PEACETIME LENS?

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ABSTRACT

There is concern that the current approach to the peacetime medical mission of Navy Medicine does not adequately address the need to provide its personnel with the skill sets necessary for the surgically intensive environment associated with the wartime mission. Navy Medicine has shifted its focus on the delivery of health care over the last decade from treatment and intervention to prevention, health promotion and population health initiatives. This focus makes good business and clinical sense from the managed care and population health perspective. This thesis examined Navy Medicine's inpatient and outpatient surgical workload and military staffing to determine the level of support it provides for the readiness mission. A trend analysis was performed using workload data from the Medical Expense and Performance Reporting System between fiscal year 1999 and 2002. This analysis shows that there has been an overall decrease in the amount of inpatient surgical workload for all surgical specialties. However, not all surgical specialties have observed an increase in outpatient workload over this same time period. Additionally, an examination and trending of end strength data for the Medical Corps and Nurse Corps using primary subspecialty codes was performed for fiscal years 1990 through 2002. The results indicated that while there have been few changes in overall end strength over the last decade, changes in specialties have occurred consistent with an emphasis on a medical model that focuses on outpatient primary care. The evidence suggests an emerging gap between the dual missions of Navy Medicine that warrants further investigation as to its potential impact on medical readiness.

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I. INTRODUCTION

A. BACKGROUND

1. Military Medicine

When one thinks of military medicine, he conjures up pictures of Navy Hospital Corpsman providing aid to the injured Marine on the battlefield of Iwo Jima; the Army surgeon performing "meatball" surgery in a MASH Unit in Korea; or the Air Force flight nurse caring for critically ill patients on a C-141 between Germany and the United States. Military medicine is the healthcare support establishment that is charged with the medical care and well being of our nation's warriors… our soldiers, airman, sailors, and Marines. It is a tremendous responsibility that is shouldered by the men and women of the military health establishment. It is these operational roles that are the primary drivers for maintaining these health care providers in uniform.

However, over the last decade, the face of the military medical establishment is changing to look more like the civilian health care institutions found in the United States. This thesis will explore the interwoven competing factors of health care service to the nation's active duty military forces, their families, and retirees and their families by looking specifically at Navy Medicine and how or if the day-to-day peacetime work of this diverse organization supports the existence of the wartime mission of the sailors and Marines through the perspective of basic workload measures and historical staffing trends.

2. National Healthcare

Before it is possible to fully understand the complexities and challenges facing Navy Medicine today, it is important to obtain a broader perspective of the U. S. healthcare systems and the forces that drive the way the healthcare industry is operated. The national healthcare system provides a backdrop and a framework for understanding the Navy's healthcare system, as there are many similarities between the peacetime healthcare provided by the Navy and most of the nation's largest Health Maintenance Organizations (HMO). Once an appreciation for this national system is gained, it is then

possible to comprehend the endeavor that Navy Medicine faces in providing healthcare to its beneficiaries in both war and peace.

It would be safe to say that in comparison to many other countries, the costs for healthcare in the U.S. can be characterized as excessive. "The United States spends considerably more than the developed country average on health care, and the value we receive is questionable."[1] In 2000, when compared to the average of all the countries in the Organisation for Economic Co-Operation and Development (OECD)[2], U.S. expenditures on health as a percent of gross domestic product is over 60 percent higher (13 percent in U.S. vs. 8.1 percent for OECD average). Yet there is almost a 50 percent higher incidence of cancer (per 100,000 population) in the U.S. and virtually no difference in infant mortality rate (deaths per 1000 live births) when compared to the average of OECD countries.[3] Additionally, the World Health Organization reports that some of the leading risk factors in terms of the burden of disease they cause are unsafe sex, high blood pressure, tobacco consumption, alcohol consumption, high cholesterol and obesity.[4] The U.S. has a much higher incidence of diseases as a result of increased prevalence of these risk factors. The U.S. health system, while technologically more advanced than most of the rest of the world, has its costs and the return on investment is frequently uncertain.

There are a number of factors that affect the costs of healthcare. Some of these include the use of new medical technologies in healthcare,[5] cost of prescription drugs[6],

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[1] Ball, M.J., Beaulieu, D., Douglas, J.V., Ramsaroop, P. *Advancing Federal Sector Health Care: A Model for Technology Transfer*, p.5. Springer, New York. 2001.

[2] Countries include Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States.

[3] Organisation For Economic Co-Operation And Development, *OECD Health Data 2002 – Frequently Asked Data.* [http://www.oecd.org/EN/document/0,,EN-document-684-5-no-1-29041-0,00.html] Accessed November 2002.

[4] The World Health Organization. "The World Health Report 2002: Reducing Risks, Promoting Health Life". [http://www.who.int/whr/2002/Overview_E.pdf]. Accessed December 2002.

[5]National Institute of Science and Technology, Advanced Technology Program, *ATP Focused Program: Information Infrastructure for Healthcare,* Advanced Technology Program Web site, [http://www.atp.nist.gov/atp/focus/iifhc.htm], February 2002.

[6] Levit, K., Smith, C., Cowan, C., et al. "Trends In U.S. Health Care Spending, 2001", p.159. *Health Affairs,* Vol. 21, No. 1. Jan – Feb 2003.

growth of hospital spending (a key driver of growth in total spending),[7] and rising hospital wages, presumably to address the shortage of nurses[8] and rising physician incomes.[9] Health care spending grew 8.7 percent per capita in 2001.[10] "The sharp increase in the health share of the gross domestic product (GDP) from 13.3 percent in 2000 to 14.1 percent in 2001 was due…to slower economic growth resulting from the recession that began in March 2001 and that was exacerbated by the September 2001 terrorist attacks."[11] 2001 was the "fifth straight year that growth in spending exceeded the previous year's rate. This long period of accelerating annual spending growth is in stark contrast to the mid-1990's."[12]

It was during the late 1980's and early 1990's that the rapid growth of healthcare costs saw the evolution of the managed care system and HMOs. An HMO can be defined as "an entity that provides, offers or arranges for coverage of designated health services needed by plan members for a fixed, prepaid premium."[13] HMOs served to act as both the health insurer and the health care delivery system.[14] These organizations were able to hold down the costs of medical care primarily by getting health care providers to take discounted payments, reducing the numbers of hospital admissions, and decreasing the lengths of stay while patients were hospitalized. HMO's were "gatekeepers" to those individuals who would seek health care and ideally served to only allow those who truly needed care inside the health system. This system of providing care to the nation seemed to have immediate results in terms of reducing expenditures on health care. But "it is clear, however, that managed care's ability to constrain payment rates for and use of

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[7] Strunk, B. C., Ginsburg, P.B., Gabel, J. R. "Tracking Healthcare Costs: Growth Accelerates Again in 2001", *Health Affairs*, Vol. 21, No. 6. September 2002. [http://www.healthaffairs.org/1130_abstract_c.php?ID=http://www.healthaffairs.org/Library/v21n6/s3.pdf]

[8] Strunk, et al.

[9] Ball, et al.

[10] Levit, K., Smith, C., Cowan, C., et al. "Trends In U.S. Health Care Spending, 2001", p.154. *Health Affairs,* Vol. 21, No. 1. Jan – Feb 2003.

[11] Ibid.

[12] Ibid.

[13] Joint Interim Committee on Managed Care, Glossary of HMO Terms [http://www.senate.state.mo.us/mancare/terms.htm]. Accessed November 2002.

[14] Wagner, Eric R., "An Overview of Managed Health Care," *In The Managed Care Handbook*, edited by Peter R. Kongstvedt, M.D., Gaithersburg, Maryland: Aspen Publications, Inc., July 1996.

hospital services has diminished."[15] The nation is once again looking for the tools to assist in cost containment and also improving the efficiency and effectiveness of our delivery methods.

Using this national context, we begin to explore the health system of the Department of Defense.

3. Department of Defense Health Care Trends

The Military Health System (MHS) falls under the auspices of the Assistant Secretary for Defense–Health Affairs. This agency is responsible for the organization, infrastructure, personnel, readiness, and execution of military health care to all eligible beneficiaries. The mission of the MHS states that it will support "the Department of Defense and our nation's security by providing health support for the full range of military deployments and sustaining the health of members of the Armed Forces, their families, and others to advance our national security interests."[16] These beneficiaries include the active duty forces, their family members, retirees, and their family members. The beneficiary population of the MHS today numbers roughly 8.2 million men, women, and children.[17]

The annual budget for the MHS was approximately $23.9 billion dollars in 2002,[18] which includes a one-time charge of $4 billion dollars for the TRICARE For Life Initiative. The Defense Health Plan (DHP), which includes military medical care, makes up over 10 percent of the DoD's operation and support costs and represents the fastest-growing segment of this spending category.[19] The Congressional Budget Office projects that annual medical spending will almost double from $33 billion to $55 billion between 2007-2020.[20] "Many of the same forces that cause national health expenditures to rise –

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[15] Strunk, et al.

[16] MHS Strategic Plan. 1999.

[17] Ball, M.J., Beaulieu, D., Douglas, J.V., Ramsaroop, P. *Advancing Federal Sector Health Care: A Model for Technology Transfer*, p.17. Springer, New York. 2001.

[18] Franco, Rich. "MPN 101: Medical Manpower and THCSRR Processes Briefing". [http://www.changearchitect.com/manpower/PlenaryPresentations/THCSRRReadiness.ppt]. Accessed December 2002.

[19] Congressional Budget Office Study, "The Long-Term Implications of Current Defense Plans," p. 22. January 2003.

[20] Ibid.

an increase in the volume of health care services available and expanded use of new, high-cost drugs and procedures – translate into higher military medical costs."[21] This increasingly high cost of health care is a focal point for decision makers in the military and in Congress.

Adding to the complexity of the largest and most diverse health care organization in the world, the MHS has two unique and overlapping missions in the delivery of health care. The first mission, commonly referred to as the "readiness" mission, is the primary reason the uniformed medical establishment exists. This mission supports the active duty forces in time of war, ideally - where and when that care is needed. They provide routine medical care to the active duty forces who are in the fleet, in the field, or forward deployed.

The second mission, commonly referred to as the "peacetime benefit" mission, is where the bulk of MHS's resources go every year. This operation is accomplished daily in both the familiar collection of "brick and mortar" military facilities, known as Military Treatment Facilities (MTFs) here in the U.S. and abroad. Additionally, this mission also occurs in civilian health care institutions under the oversight of the managed care plan called TRICARE, formerly known as the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS). This peacetime mission is responsible for the care of beneficiaries that includes active duty members, their family members, retirees and their family members and is codified by Title 10 U.S. Code Armed Forces.

These two missions, the readiness and peacetime missions, are not mutually exclusive nor are they perfect complements of each other for reasons that we will explore later. Furthermore, these missions can be competing entities, which add to the labyrinth of intra and inter-organizational relationships and increase the challenges of meeting both missions simultaneously. To underscore these relationships, the Assistant Secretary of Defense (Health Affairs), Dr. William Winkenwerder, Jr. outlines the vision of DoD (HA) as "A World-Class Health System That Meets All Wartime and Peacetime Health and Medical Needs for the Active Military, Their Families, and Retirees."[22]

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[21] Ibid. p. 23.

[22] Winkenwerder, Jr. William. Briefing "Vision and Priorities 2002."

a. TRICARE and Force Health Protection

During the 1980's, many of the same financial pressures and cost containment issues that were straining the national health care systems were also affecting the Department of Defense (DoD) and the MHS. Since Congressional approval in 1943 of maternal and infant care for family members of active duty personnel,[23] the health care benefits of family members provided by the MHS have increased. The early 1980's saw the beginning of the military buildup under the Reagan administration. The civilian sector was just beginning to dabble in the managed care arena and the DoD was beginning to put pressure on the MHS to tighten its budget. Observing the successes in the civilian market with managed care, and in response to these rising costs, 1982 saw the implementation of CHAMPUS Reform Initiatives (CRI) [24]. These initiatives were a series of "experiments" for the MHS to assess the viability of a different health care system that emphasized improved access to medical care while behaving in a more fiscally responsible way to handle the health care needs of the DoD. These trials were largely successful and by 1992, TRICARE was implemented as the MHS's HMO to provide care for its beneficiary population. Though there were a number of initial problems with TRICARE, the system that is currently in place is largely meeting the needs of its beneficiaries through improved access to care, portability initiatives[25], and cost containment.

Today, TRICARE is a regionally based managed care system, using Tri-Service assets (military and contractor assets) and attempts to combine best business practices along with innovative and evidence based clinical patient management approaches to deliver care to its constituents. TRICARE offers beneficiaries the choice of three health plans and is operated through a worldwide network of approximately 91 hospitals and 374 clinics.[26] The MHS employs roughly 106,000 active duty military

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[23] Barbour, G. Briefing: "The Federal Sector of American Medicine: History & Services, Present and Future." Health Services Administration Web Site. [http://hsa.usuhs.mil/pmo526/slides/526.02.GB.02Fed_Prgms.ppt]. Accessed November 2002.

[24] Ibid.

[25] Portability initiatives is the term used to describe a uniform benefit, i.e., no matter where you live in the U.S. and no matter what TRICARE contractor is providing your care, the health benefits are the same.

[26] Ibid.

personnel and 48,000 civilian personnel to operate and maintain this large medical establishment.[27] These totals do not include the number of contract employees as a part of MHS.

One of the primary focal areas for the MHS is Force Health Protection (FHP). Force Health Protection is the United States military's medical doctrine. "The goal of FHP is to provide a fit and healthy force when and where the mission requires it while simultaneously adapting the medical forces to be more technologically advanced, smaller, and more mobile."[28] The three pillars of FHP include the development of a "healthy and fit force, casualty prevention, and casualty care and management."[29] Casualty prevention and casualty care and management are two aspects of this thesis that will be explored further from a service level perspective.

A second priority of the MHS is improving the performance of the TRICARE health program. The DoD is interested in improving access to healthcare and standardizing the use of business practices to optimize the utilization of resources. Because of the high costs associated with the delivery of health care, DoD has a responsibility to provide high quality health care in a cost efficient manner. In order to do so, MHS's performance must be measured against various metrics and goals that are commonly accepted and used in the civilian sector. There is currently a tremendous effort underway to improve the efficiency and delivery of medical care by improving the business practices of TRICARE.

One of the cornerstones of efficiency improvement and reforms made in access to medical care has been the concept of the primary care manager (PCM). The concept of PCM is designed to assign TRICARE beneficiaries a specific medical provider (PCM) who will provide primary oversight and continuity of health care and ensure that the level of care provided is of the highest quality. The relationship developed between patients and their PCM is the basis for successful prevention-oriented, coordinated healthcare. The PCM is a part of the military's optimization initiative for

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[27] Ibid.

[28] Force Health Protection – A Capstone Document. Medical Readiness Division, J-4, The Joint Staff. [http://deploymentlink.osd.mil/pdfs/capstone.pdf]. Accessed September 2002.

[29] Ibid.

MTFs. Optimization aims to utilize best managed healthcare practices, to include preventive measures, clinical practice guidelines and case management. Patients reap benefits from consistent healthcare and improved overall health.

4. Overview of Navy Medical Department

As a "sub-system" of the Department of Defense MHS, the Navy has its own medical department managed by the Bureau of Medicine and Surgery. This organization is commonly referred to as "Navy Medicine". The Navy Medical Department is a diverse and comprehensive worldwide healthcare system that delivers quality care to approximately 700,000 active duty Navy and Marine Corps members. The total beneficiary population eligible to receive health care in this system, including active duty members, is almost 2.6 million strong.[30] The Navy states that it provides this care at "little more than half the national per capita average cost"[31] while maintaining capabilities to provide medical care in support of Navy and Marine Corps missions. There are over 35,000 men and women who make up the total force of the Navy Medicine organization. Approximately 11,000 active duty personnel make up four officer corps: Nurse Corps, Medical Service Corps, Dental Corps, and Medical Corps and over 24,000 enlisted personnel that include both Hospital Corpsmen and Dental Technicians. The Navy has three large Naval Medical Centers, 22 Naval Hospitals, 11 Naval Medical Clinics, and 28 Branch Medical Clinics all over the world to serve their beneficiaries.[32] Navy Medicine also delivers health care onboard submarines, ships, aircraft, and in the field. During contingency operations, the Navy can also man two T-AH Hospital Ships, six active Fleet Hospitals, and various other Marine and Navy platforms.

The mission statement for Navy Medicine incorporates DoD's Force Health Protection doctrine, indicating its commitment to "promote, protect, and restore the health of our sailors and Marines, families, retired veterans and all others entrusted to our

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[30] Bureau of Medicine and Surgery Home Page. [https://bumed.med.navy.mil/]. Accessed December 2002.

[31] Ibid.

[32] Bureau of Medicine and Surgery Web Site: Worldwide assignments. [http://navymedicine.med.navy.mil/med00nc/duty.htm]. Accessed December 2002.

care, anytime, anywhere."[33] Force Health Protection (FHP), as the DoD's military medicine doctrine, is a comprehensive medical strategy that "describes the integrated preventive and clinical programs that are designed to protect the 'total force'."[34] FHP provides for a unique change in the conventional methods of combat medicine in that it:

- Institutes programs to develop and support healthy and fit service members and families
- Emphasizes prevention of injury and illness while maintaining an exceptional casualty management system
- Employs concepts that call for only essential care in the theater and evacuation to definitive care outside the theater of operations[35]

Figure 1 below, taken from the Navy Medicine Strategic Plan, shows the model that Navy medicine uses to illustrate its strategic focus. With FHP being the overarching strategy, the three pillars of Readiness, People, and the Health Benefit support this strategy.

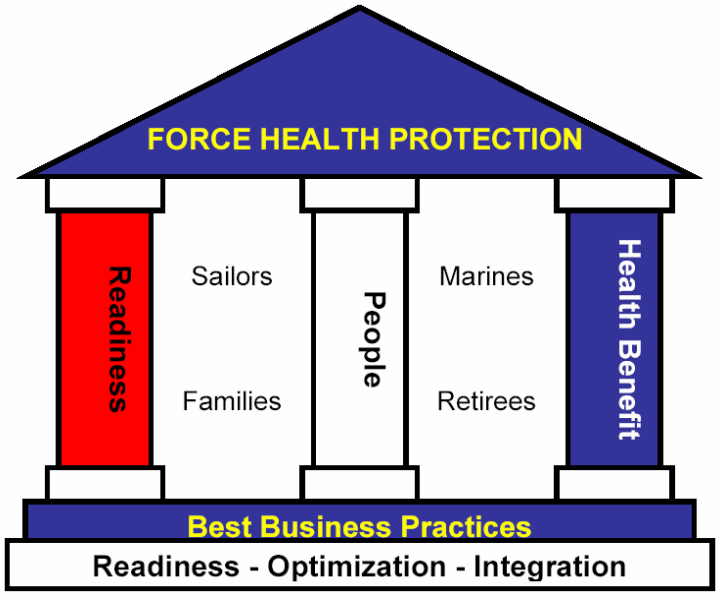

Figure 1. Navy Mission is Force Health Protection

Source: Navy Medicine Strategic Plan 2003

[33] Navy Medicine Strategic Plan. [https://bumed.med.navy.mil/ Navy Medicine Strategic Plan 2003.doc]. November 2002. Accessed December 2002.

[34] Force Health Promotion: Capstone Document. Medical Readiness Division, p. 1. J-4, The Joint Staff. No Date.

[35] Ibid.

The *Readiness* pillar represents Navy Medicine's "readiness to support wartime/contingency operations"[36] anytime, anywhere. This is no small commitment, requiring significant resources to be implemented. The middle pillar represents the *People* of Navy Medicine. The presence of this pillar signifies recognition of the importance of and requirement for meeting the career and personal needs of military, civilian, and contract personnel in accomplishing Navy Medicine's mission of FHP. Factors that are a part of this pillar include professional development, skill utilization, and career progression. Ultimately, the second pillar signifies the importance of job satisfaction and training to meet the requirements placed upon Navy Medicine. The third pillar represents the *Health Benefit* of Navy Medicine. By focusing on improving health and avoiding illnesses, improving access to care and effectively communicating with the customer, the Health Benefit pillar enables Navy Medicine "to focus on managing the health of a defined population of enrollees."[37]

These pillars are supported by the foundation of Navy Medicine's model as found in the Best Business Practices and Readiness – Optimization – Integration (ROI) platform. The platform of Best Business Practices recognizes the need to operate an organization that uses its resources in an efficient and effective manner. Sound business practices will assist in ensuring that Navy Medicine is getting the best value for its dollars. As outlined in the previous section, costs are a primary consideration when looking at the value an efficient and effective health system provides to its beneficiaries. In this era of cost consciousness, Navy Medicine has embraced the importance of functioning in a constrained environment and seeks to maximize its effectiveness. Ideally, these business practices directly support the entire Navy Medicine enterprise by integrating its full spectrum of responsibilities including "clinical care, forward-deployed medical care, education and training, research and development, finance, logistics, information management, facilities maintenance and administration."[38]

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[36] Navy Medicine Strategic Plan.

[37] Ibid.

[38] Ibid.

5. Navy Medicine's Dual (Competing?) Mission

The words "anytime, anywhere" in Navy Medicine's mission statement hints at the complexities and challenges that can underlie a health care system with such a diverse mission. The Navy Medical Department has two unique and somewhat overlapping missions in the provision of health care to eligible beneficiaries. In the Strategic Plan mentioned above, the statement "the military medical departments exist to support their combat forces in war; and in peacetime, to maintain and sustain the well being of the fighting forces in preparation for war" highlights the breadth and diversity of obligations incurred by Navy Medicine. Navy Medicine's dual mission is depicted in Figure 2 below.

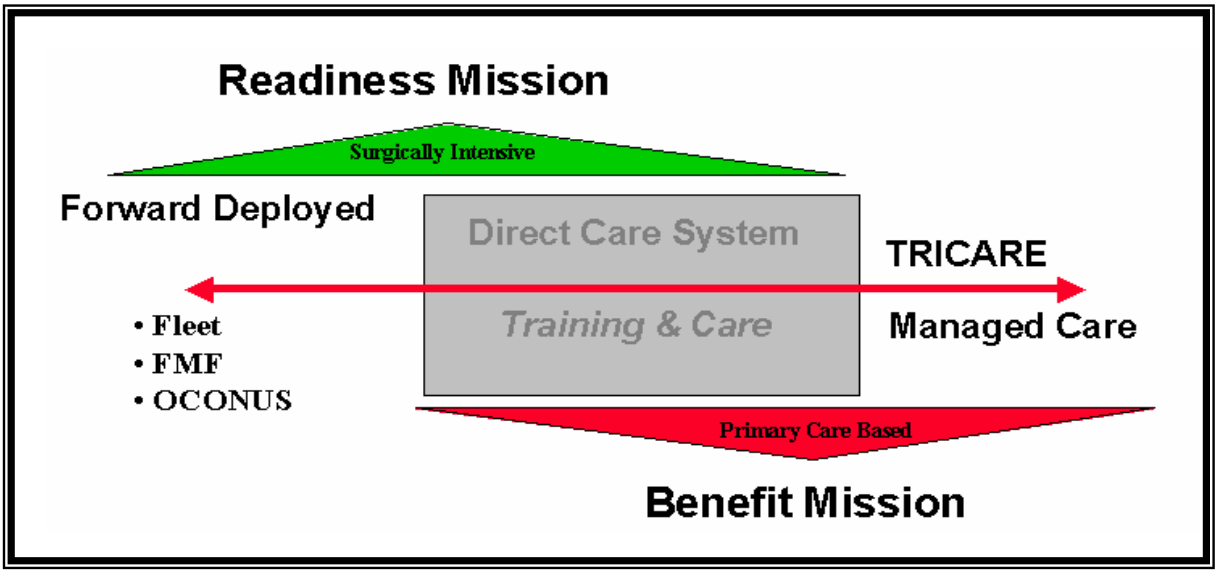

Figure 2. Navy Medicine's Dual Mission

Source: Total Health Care Support Readiness Requirements Briefing[39]

The first mission for Navy Medicine is the Readiness Mission. This mission, from the broad perspective, stems from the National Security Strategy (NSS). From a more focused context, military medicine, and consequently, Navy Medicine, further supports the NSS and ultimately the combat forces based upon the National Military Strategy that

[39] Melody, B.T. "Total Health Care Support Readiness Requirements (THCSRR) Update Briefing". Sent to author via email. November 2002.

outlines a war scenario defined by two nearly simultaneous major theater wars (MTWs). This activity is primarily a surgically intensive forward deployed mission and includes "mobilizing two hospital ships, supporting the fleet and the Marine Corps' operations ashore and afloat, [and] numerous fleet hospitals."[40]

The second mission for Navy Medicine is the Benefit Mission. This mission, required by law, is provided to service members, their families, and retirees and their families and utilizes the majority of resources that are "consumed" each day in Navy Medicine. This mission most frequently occurs in the familiar MTF's and clinics here in the United States and abroad and most resembles the HMOs described in the previous section. The Benefit Mission emphasizes population health initiatives, health promotion and wellness programs, and is community, work center, and primary care based.

Figure 2 illustrates the somewhat overlapping nature and continuum of the two missions described above. "Navy Medicine arrives at the 'right size' based on the number of active duty medical personnel required to meet *both* the wartime *and* the day-to-day operational requirements of the fleet and Fleet Marine Force."[41] These readiness and peacetime roles do not exist in isolation or apart from each other. The degree or extent to which these two missions overlap in terms of personnel, financial, training, and material resources would indicate possible "savings" and efficiencies within Navy Medicine.

Ideally, these two missions would work hand in hand and line up directly above one another using the Dual Mission model in Figure 2. But because of the diverse nature of the mission and budgeting considerations, these missions do not necessarily support each other. Former Assistant Secretary of Defense (Health Affairs), Dr. Sue Bailey dubbed the MHS as "the only HMO that goes to war."[42] This statement goes a long way in explaining the potentially confusing nature, roles, and responsibilities of Navy Medicine. With the advent of managed care, there has been an increased focus on Force Health Protection measures that emphasize health promotion and prevention strategies.

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[40] Weber, Timothy H., "The THCSRR Model – Determining Navy Medicine's Readiness Manpower Requirements." p. 19. Navy Medicine. September – October 1994.

[41] Savitsky, M.S., LeDonne, D.M., "Maximizing the Mission of Medical Readiness in a Joint Environment: A Systems Model.", p. 21. Navy Medicine, May-June 1995.

[42] TRICARE Region Nine Newsletter. *News At Nine*, p. 3. Vol. 4, Issue 2. Spring 1999.

The MHS Optimization Plan states "Most importantly, our focus will shift from providing primarily interventional services to better serving our beneficiaries by preventing injuries and illness, improving the health of the entire population while reducing the demand for the much more costly and less effective tertiary treatment services."[43]

While this focus may have benefits in terms of cost avoidance and improved overall health for our military members, there is concern that the day-to-day operations of providing peacetime medical care do not adequately prepare the Navy in its ability to grant optimal care in the surgically intensive environment a wartime scenario is likely to produce. While peacetime care is vital, it "does little to prepare military medical personnel for war."[44]

The vast majority of medical care provided in the Navy is centered on its Primary Care portals. Primary Care focuses on promoting healthy lifestyles and providing routine clinical preventive services. This focus makes good business and clinical sense from the managed care perspective and is the "bread and butter" of military medicine. There is a seemingly large disparity between the day-to-day functions of primary care in fixed MTF's as compared to the surgically intensive focus of battlefield medicine in mobile, austere environments. The Navy does not possess a single Level I Trauma Center in its entire hospital system (a trauma facility that is accredited and fully staffed by surgical and support personnel 24 hours a day). Leitch, et al assert that "we are failing to train them [military medicine] in peacetime for the tasks of war, and there is an urgent need to address the problem using all available resources."[45]

Further complicating the matter, with new legislative requirements to initiate the TRICARE for Life program, the MHS is now responsible to provide medical care for Medicare-eligible uniformed service retirees and family members, including widows/widowers. Billed as "the most sweeping improvements to the Department of

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[43] MHS Optimization Plan: Interim Report, p. 1. February 1999. [http://www.tricare.osd.mil/mhsophsc/mhs_supportcenter/Library/MHS_Optimization_Plan.pdf]. Accessed November 2002.

[44] Leitch, R. A., Moses, G. R., Magee, H. "Simulation and the Future of Military Medicine," *Military Medicine,* p. 350 Vol. 167, April 2002.

[45] Ibid.

Defense's healthcare system in nearly 30 years"[46], TRICARE for Life places another responsibility and resource consumer on the MHS that from the outset has limited and competing obligations.

The age base of the population that the MHS serves is getting older. One implication of this may be a widening disparity between the type of medical care seen in the MTFs on a regular basis and that which may be required on the battlefield. Figure 3 below shows the projected age changes in total MHS beneficiary population from 1995 to 2007.

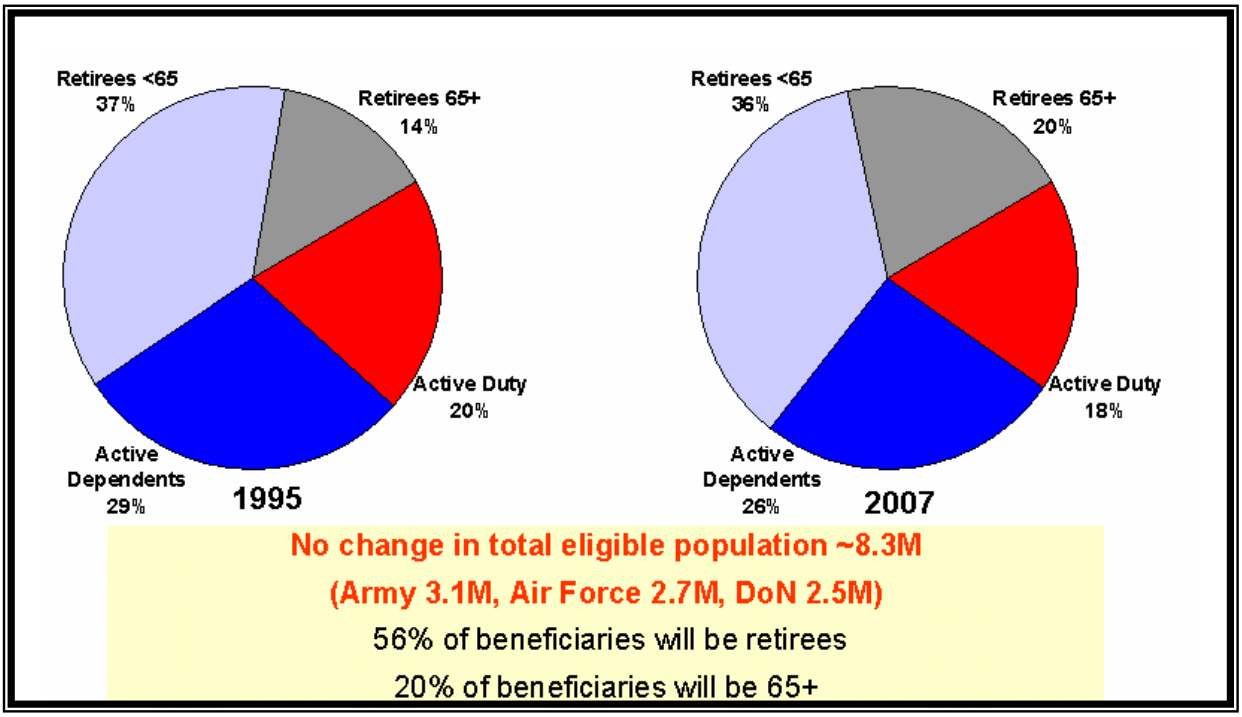

Figure 3. Beneficiary Population Change FY 1995-2007
Source: MPN 101: Medical Manpower and THCSRR Processes Briefing[47]

Previous studies confirm that the clinical experience "at military hospitals is essentially non-existent and inadequate for maintaining current clinical competence in

[46] TRICARE for LIFE Fact Sheet. [http://www.tricare.osd.mil/tfl/pdf/TFLEnglish.pdf]. Accessed January 2002.

[47] Franco, R., "MPN 101: Medical Manpower and THCSRR Processes Briefing". [http://www.changearchitect.com/manpower/PlenaryPresentations/THCSRRReadiness.ppt]. Accessed December 2002.

trauma surgery."[48] The Navy has excellent medical centers that serve as first-rate training institutions for new physicians and graduate medical education programs. These training institutions, as stated by the Surgeons General, help to attract and retain military physicians. However, the competing nature of operational medical training (if the physician is out in the field training, then he is not in the hospital seeing patients) "makes it difficult for many resident and staff physicians to prepare adequately for war-related conditions."[49] The overlap between the day-to-day medical care and wartime medical care may be decreasing due to the new emphasis on health promotion and prevention strategies, thus translating to a decreased ability to meet the medical needs in the battlefield environment. This research will attempt to quantify and characterize this difference through basic workload measures and staffing data.

B. SCOPE OF THE THESIS

The scope of this thesis will be limited to the use of unclassified materials. This thesis will provide background information on the Navy Medicine force structure related to manpower. This thesis will also include an examination of workload measures as they relate to the clinical settings in Navy Medicine. Additionally, a statistical trending and description of Navy Medicine's clinical workload and force structure over the past few years will be reviewed. Lastly, a discussion of potential medical readiness implications based on the findings of this research will be addressed.

C. RESEARCH METHODOLOGY

The methodology used in this thesis research will consist of the following steps.

- Conduct a comprehensive literature search of books, journal articles, and Internet based materials.
- Conduct a comprehensive review of government reports concerning military medicine, force structure initiatives, TRICARE implementation,

[48] Knuth, Thomas E. "The Peacetime Trauma Experience of U.S. Army Surgeons: Another Call for Collaborative Training in Civilian Trauma Centers". p. 141 Military Medicine. March 1996.

[49] Smith, A.M., Petersen, H.V. "Matching Fleet Medical Readiness to the New Naval Strategy", p. 27. Naval War College Review, Winter 1997.

optimization efforts, and Department of Defense Directives for the Assistant Secretary of Defense for Health Affairs, among others.

- Conduct interviews to gain critical insight and understanding of current government policy governing the roles of the Department of Defense-Health Affairs, TRICARE initiatives and Optimization Projects, Bureau of Medicine and Surgery and other military health care organizations as necessary.
- Evaluate clinical workload data as supplied by the Department of Defense-Health Affairs, Bureau of Medicine and Surgery, Naval Medical Information Management Center, and others as needed.
- Analyze the above data, looking for trends, statistical significance, and interpreting results to provide implications for changes to manpower/billet structure, training needs, and measures of readiness.

D. RESEARCH QUESTIONS

Primary Research Question:

- Has there been a change in wartime-relevant medical workload and medical staffing over last decade, impacting medical readiness?

Secondary Research Questions:

- What is the role of Navy healthcare in peacetime and wartime?
- How is workload measured and reported in Navy Medicine?

E. LIMITATIONS OF THE STUDY

This research looks only at the Navy Medical Department officer communities. The vast majority of personnel in Navy Medicine are enlisted personnel. These individuals are a critical element to consider in a comprehensive evaluation and overall assessment of medical readiness of Navy Medicine. No attempt was made in this study to consider the enlisted force, its training, roles, and responsibilities. Furthermore, the scope of this study is extremely broad and therefore the applicability of the results will need further refinement in order to useful. Additionally, this research does not consider the significant and vital role that the Reserve Forces play in the augmentation and support of the wartime mission for Navy Medicine. Another limitation of this study is that the effects of various training programs and exchange initiatives with civilian institutions have not been considered. Lastly, medical readiness can be viewed from many differing

and valid perspectives. Typically, peacetime care is not used as a measure of medical readiness for wartime scenarios. This thesis is taking into consideration only two measures important in its assessment of readiness: (1) Volume and type of workload and (2) military staffing trends. Conclusions and recommendations are based on these measures and should not be construed as a final, prescriptive analysis.

F. ORGANIZATION OF STUDY

Chapter II will explore and describe the methodology and systems used to measure workload incurred by Navy Medicine's Benefit Mission and describe these measurements. This will include a historical trending of the type of workload over the last four years and a statistical description of how this has changed. Additionally, Chapter II will do a comparative analysis of the type of workload (e.g., surgical vs. medical) seen in Navy Medicine's MTFs.

Chapter III will describe and analyze the staffing of Navy Medicine's Officer Corps, focusing primarily on the Medical Corps and Nurse Corps. A central area of examination will scrutinize the surgical specialties and "wartime" critical specialties of the various Corps. This will be contrasted to the more typical "peacetime" specialties and manning changes over the last few years.

Chapter IV will build on the previous two chapters, bringing together a comprehensive picture of workload and staffing changes and how they complement each other or diverge in the overall mission of preparing the Navy medical establishment for wartime.

Finally, Chapter V will discuss conclusions reached from this study, including any recommendations and observations concerning the findings found in previous chapters. Lastly, possible future implications for Navy Medicine and its force structure model and readiness will be discussed.

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II. CLINICAL WORKLOAD TRENDS IN NAVY MEDICINE

A. OVERVIEW

According to the Department of Defense (DoD) Medical Readiness Strategic Plan (MRSP) 2001, the definition of Medical Readiness should be stated as….

> *… the ability to mobilize, deploy and sustain field medical services and support for any operation requiring military services; to maintain and project the continuum of healthcare resources required to provide for the health of the force; and to operate in conjunction with beneficiary healthcare.*[50]

While the MRSP is no longer an active document used by the DoD, the above definition serves as a starting point for a discussion of medical readiness. The topic of medical readiness is an extensive and complicated subject that comes in a variety of flavors, mixes and perspectives. According to Richard Doyle, "Medical readiness cannot be considered in a vacuum. It is inextricably linked to broader readiness issues affecting the entire force structure and the doctrine, strategy and tactics designed to employ it."[51] Therefore to discuss medical readiness in a narrow context from the outset is somewhat naïve.

Navy Medicine does not view "medical readiness" through a "peacetime lens," i.e., readiness is not measured using peacetime metrics as an indicator of our ability to meet the wartime mission. However, with the increasing cost of medical care, and the excess capacity that Navy Medicine maintains to meet wartime scenarios, it seems increasingly important that the type of work that Navy Medicine performs during peacetime be relevant and pertinent to justifying this excess capacity. With this realization, this research will begin to explore medical readiness from the perspective that the quantity and quality of work performed in the Medical Treatment Facilities (MTFs) is an important factor in assessing medical readiness. This means that the amount and type

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[50] Assistant Secretary of Defense, Health Affairs*, Medical Readiness Strategic Plan (MRSP) 2001,* DoD 5136.1-P, March 1995.

[51] Doyle, R. B. "Readiness and Military Health Care After the Cold War". Medical Readiness: Policies and Issues Web Site. [http://www.teleologic.net/IDEA/MR/MR_Home.htm]. Accessed November 2002.

of work performed in Navy Medicine's MTFs should ideally enhance the skills and talents of the individuals who are called upon to provide medical care in the forwardly deployed area of operations. This chapter will describe and analyze the historical workload seen in all of Navy Medicine's MTFs.

B. READINESS – WHAT IS IT?

In his book *Military Readiness: Concepts, Choices, Consequences,* Richard Betts discusses Mobilization, Structural, and Operational Readiness as a continuum of readiness. He views readiness as a mix of speed and effectiveness and uses descriptors such as time horizon, potential capability, and actual capability as the measures for which readiness can be assessed. Table 1 below presents this framework for further discussion.

Table 1. Summary of Stages of Readiness

Stage	Time Horizon	Potential Capability	Actual Capability
Unreadiness	> Decade	Latent	Negligible
Mobilization Readiness	Years	Incipient	Embryonic/skeletal
Structural Readiness	Months / Weeks	Organized	< 100% of potential
Operational Readiness	Days / hours	Realized	100% of potential

Source: *Military Readiness: Concepts, Choices, Consequences*[52]

Mobilization Readiness, as a policy decision is viewed by Betts as the decision to maintain a peacetime economy with the potential to shift that economy to a wartime economy as the threat for war increases. The capability of this type of readiness is minimal, as only a small nucleus of full time members are in place to help constitute a bigger force as the need arises. This process could take years to build up to a full scale war machine, but is viewed to be a reasonable approach when considering the monetary costs associated with maintaining a more ready force. *Structural* readiness concerns *mass* as "it is about how soon a force of the size necessary to deal with the enemy can be available."[53] *Structural* readiness denotes the number of personnel that possess a minimal

52 Betts, Richard K., *Military Readiness: Concepts, Choices, Consequences.* p. 40. Harrisonburg, Virginia: The Brookings Institution, 1995.

53 Ibid. p. 41.

acceptable level of training and competency. *Structural* readiness answers the question of how effective the total force can be, if given enough time to "pull up its socks."[54] *Operational* readiness is concerned with *efficiency* "and is measured in terms of how soon an existing unit can reach peak capability for combat."[55] The question for *operational* readiness for an organization becomes a matter of performance and the level of effectiveness given that there is "no time to pull up its socks."[56]

These various stages result in a continuum of readiness and are not without their associated costs. Tradeoffs occur when evaluating the capacity of the organization to expand, consumption of resources used by the organization, and the capability of units when measured against time. Using the continuum above, it is safe to say that *Operational* Readiness is the most monetarily costly form of readiness, as it uses up large amount resources with constant training, manning, and expenditures. The result is that you have a force that is always ready to go and able to provide the capability and capacity that a government may need.

Conversely, the costs of *Mobilization* Readiness are much lower, as the consumption of resources is minimized. The consequence of this choice of readiness is that the size and capability of the military forces is severely limited. The time horizon needed to field an adequately sized force may exceed what is required for victory. The capability of the force is not yet determined and thus vulnerabilities exist for the governments which choose this stage of readiness.

Ultimately, along this continuum of the stages of readiness, choices and tradeoffs must occur. It is within the confines of tradeoffs that the concept of medical readiness will be discussed.

1. Medical Readiness

An earlier study by the Center for Naval Analysis (CNA) laid the groundwork for this discussion on medical readiness. They provided two views of medical readiness. One view was the *Health Readiness* perspective that "involves maintaining the health of all

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[54] Ibid, p. 41.

[55] Ibid. p. 40.

[56] Ibid. p. 41.

types of military personnel."[57] This perspective is focused on the development of a healthy force in preparation for war. Ensuring that the military forces receive the proper preventive healthcare prior to battle is vital to a successful force. *Health Readiness* is synonymous with the "benefit mission" discussed in the first chapter.

The second view outlined by CNA is described as *Care Readiness.* This view "involves the readiness of the caregivers themselves as well as all medical support personnel and equipment involved in providing care during military operations."[58] It is focused on the ability and preparedness of medical forces to deliver medical care during wartime and constitutes the area of concentration for this research. Within this *Care Readiness* model, CNA provided seven differing perspectives with which to evaluate readiness. These perspectives included historical, mission planner, strategic planner, trainer, service, mobilization planner, and operator. This thesis and this chapter look at medical readiness primarily through a historical perspective in that historical workload measures are considered as a basis for preparedness.

While there is a vast array of discussion points, measurements and assessment tools designed to assign a value to "readiness," the ability to provide a single tool that gives an overall perspective of medical readiness is beyond the scope of this research. According to CNA, "it is difficult to measure medical readiness directly."[59] There are a number of proxies and surrogates that are used to infer or calculate readiness, such as the working condition of equipment, completion of training milestones, resources allocated, and staffing levels. But these are only indirect measures of readiness. Possessing indirect measures is problematic in terms of being able to thoroughly analyze readiness.

For example, if we use Readiness as a dependent variable and use staffing levels as an independent variable, then one would expect to see an increase in Readiness with increasing levels in staffing. In other words, there is a positive relationship between the two variables. But because staffing is an indirect measure of Readiness, it may not accurately reflect the true Readiness measure associated with a reduction in staffing. Staffing may be reduced because of technological innovations that actually improve

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57 Horne, David E., *TRICARE and Readiness*. Center for Naval Analysis. p. 10. 1996.

58 Ibid.

59 Ibid. p. 6.

Readiness. But because staffing has decreased, the effect of technology is not considered and therefore a lower level of Readiness is mistakenly recorded.

It is with this understanding of the limitations of indirect measures that the author decided to use peacetime workload as an indirect measure for medical readiness. The purpose of this chapter is to look at the quantity and quality (type) of workload performed in Navy MTFs during peacetime and trend these workload metrics between 1990 and 2002. Some emphasis will be placed on historical surgical workload, as this is likely to be seen in forward deployed wartime scenarios.

C. NAVY MEDICINE CLINICAL WORKLOAD

Workload has been defined as "The total amount of work to be performed by an individual, a department, or other group of workers in a period of time."[60] The official Navy definition for workload is defined as "an expression of the amount of work, identified by the number of work units or volume of a workload factor (WLF), that a work center has on hand at any given time or is responsible for performing during a specified period of time."[61] Navy Medicine uses a variety of workload factors and information technology and decision support systems to help record uniform performance indicators, collect expense information by work centers and assist the organization to plan for and resource its personnel, business and material requirements.

Just as "workload" has a broad definition, clinical workload can be defined by a number of variables and methods. Traditionally, the number of patient visits is used as a production measure for MTF inpatient and outpatient clinics and is used as a workload factor in determination of manpower requirements. While the volume of patients seen may serve as a starting point for workload determination, this method is remiss in that it does not consider factors such as the acuity and complexity of patients seen, the skill level requirements of the providers needed to adequately treat and care for these patients, the design and material condition of the facility, time required to see, treat and care for

[60] CancerWEB Project Website. "On-line Medical Dictionary." [http://cancerweb.ncl.ac.uk/omd/index.html]. Accessed December 2002.

[61] Chief of Naval Operations. *Manual of Total Force Manpower Policies and Procedures.* OPNAVINST 1000.16J. p. B-19. January 1998.

patients, resources consumed, procedures performed, etc. For this reason, weighting scales have been developed to help account for some of the differing variables that are found with patients seen at MTF's.

In the case of an outpatient visit in a surgery clinic, when looking strictly at volume or the number of patient visits, a telephone consult (when a doctor calls a patient at home to speak with them to discuss lab results, patient conditions, treatment options, etc.) counts as *one* patient visit. Similarly, when a patient presents to the surgery clinic for an evaluation for possible surgery, a complete medical interview and history are obtained along with a full physical examination of the patient. This also is counted as *one* patient visit. Obviously the time, space, and "work" is greater for the patient visit at the clinic than for the phone consult, but both are counted as *one* visit. By weighting the different visits, the actual workload performed would be counted higher for the clinic visit when compared to the phone consult by the provider.

What follows is a brief review of the data systems and records that were used to obtain data for this research.

1. Medical Expense and Performance Reporting System (MEPRS)

Across the services of the Department of Defense (DoD), each branch has its own health care system that is to some degree unique to its constituents. This uniqueness is intended to insure that each service's health care requirements are met. But universally, the same standards of care and generally accepted practices are common to each service. Under the authority of DoD Directive 6000.12, "Health Services Operations and Readiness,"[62] ASD (HA) indicated the need to update and standardize the reporting of expense and manpower data for fixed military and dental treatment facilities across the military services.

As a result of this mandate, DoD, and consequently Navy Medicine, upgraded the use of the Medical Expense and Performance Reporting System (MEPRS) "to provide a uniform system of healthcare cost management."[63] MEPRS provides a cost assignment

[62] Assistant Secretary of Defense for Health Affairs. DoD Directive 6000.12: *Health Services Operations and Readiness.* April 1996.

[63] Assistant Secretary of Defense for Health Affairs. DoD Directive 6010.13-M*: Medical Expense and Performance Reporting System for Fixed Military Medical and Dental Treatment Facilities*. p. 8. November 2001.

methodology, uniform reporting of personnel utilization data by work centers and detailed performance measures and expense classification by work centers.[64] The overall purpose of MEPRS is to provide the decision makers of Navy Medicine and ultimately DoD with a "uniform system for managing and reporting on the fixed military healthcare delivery system."[65]

MEPRS can also assist managers at all levels because it enables quantitative data to be compared with actual performance objectives. Local decision makers can evaluate significant deviations from these objectives and take corrective actions. By having one uniform reporting system, DoD can compare across services, using the same metrics, definitions, and concepts with the confidence that "apples are being compared against apples." This standardization allows for best business practices, efficiencies, manpower management, performance, and success stories to be shared across services, thus potentially improving the effectiveness and efficiency of the MHS. It is important to note that MEPRS does not record the workload performed outside of the MTFs and dental facilities, thus the peacetime work performed in the field and on the ships or in the civilian sector is not recorded by MEPRS.

MEPRS assigns workload based on a chart of functional cost code accounts. The assignment of workload to the various accounts is critical for the determination of resource allocation. For example, the functional categories found in MEPRS are "…Inpatient Care, Ambulatory Care, Dental Care, Ancillary Services, Support Services, Special Programs, and Readiness."[66] These categories are further itemized into summary accounts and subaccounts. "An example of this hierarchical arrangement follows:

A	Inpatient Care	(functional category)
AA	Medical Care	(summary account)
AAA	Internal Medicine	(subaccount)
AAB	Cardiology	(subaccount)"[67]

[64] Ibid.

[65] Ibid. p. 9.

[66] Ibid. p. 14.

[67] Ibid.

As you can see from the above description, the first level MEPRS code identifies the workload as occurring in the inpatient arena of the facility reporting the workload. The second level code further identifies the inpatient workload into a summary account that is identified as Medical Care.[68] It is through this assignment process that "surgical workload" can be determined and trended over time. MEPRS data is available from multiple sources. Figure 4 below gives a good representation of the various IT systems and the flow of data that MEPRS can take.

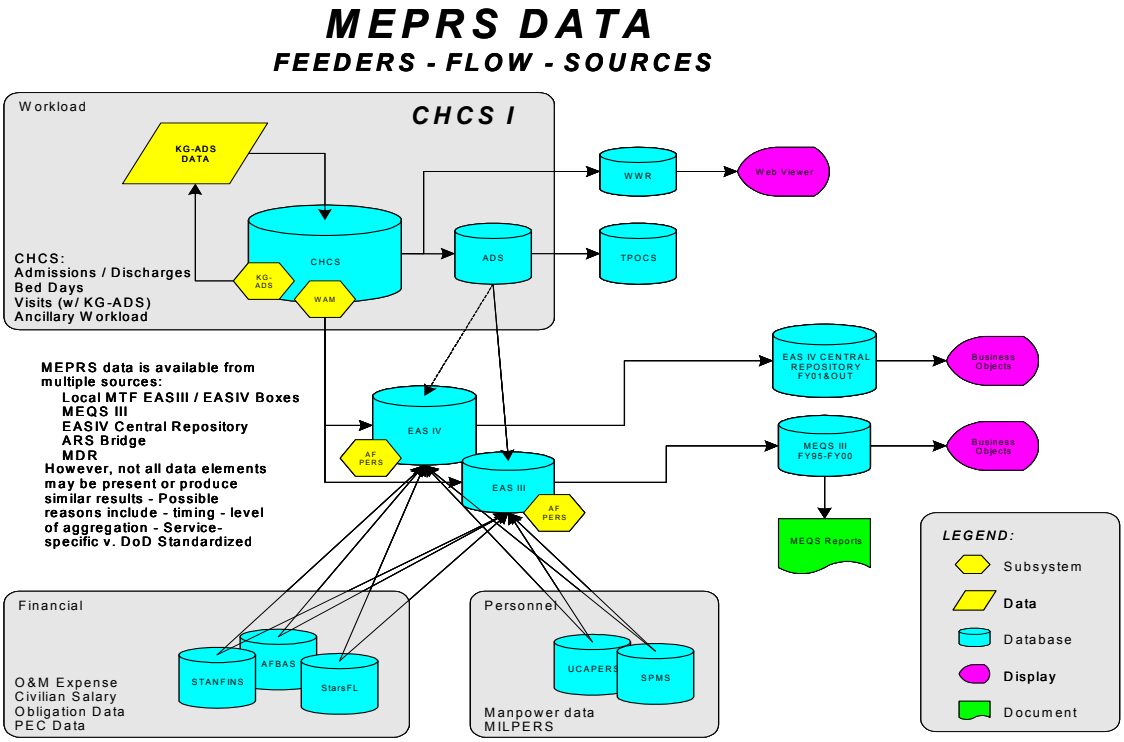

Figure 4. Various Sources for Obtaining MEPRS Data
Source: Medical Expense and Performance Reporting System/Expense Assignment System Brief [69]

[68] For full description and listing of MEPRS codes, see Appendix A-1.

[69] Bacon, R.K. "Medical Expense and Performance Reporting System/Expense Assignment System Brief." May 2002. [http://www.pasba.amedd.army.mil/dqfas/Resources/MEPRSOverview.ppt]. Accessed December 2002.

2. Expense Assignment System, Version 4 (EAS IV)

The Expense Assignment System, Version 4 (EAS IV) is the MHS's decision support system that "provides comprehensive, timely, and accurate cost information to… mangers at all levels."[70] This system is the source for all cost data and provides all MTFs with a decision support tool to manage workload, personnel, and financial information.[71] "The EAS IV provides standardized reporting of workload, expense and manpower data to integrate day-to-day healthcare and resource management activities."[72] This system tracks data on a monthly basis and utilizes the Resource Based Relative Value Scale weighted data for a more accurate costing of resources.[73] This system is integrated with MEPRS in the assignment of costs and is considered more accurate because of the ability to weight patient visits based on diagnosis and current procedural terminology (CPT) coding. Workload determination is derived from the Workload Assignment Module (WAM), which is a subsystem of the Composite Health Care System (CHCS). EAS IV is the only system within MHS that combines clinical workload, labor hours and expenses to provide the MHS with a cost/unit of service produced.

3. World Wide Report

The World Wide Report (WWR) is a file that is updated monthly and is sent from each DoD MTF's CHCS. The WWR file is used for workload reporting and bid price adjustment.[74] The WWR file counts outpatient visits and inpatient dispositions by MEPRS codes and uses relatively simple business rules (e.g., it counts telephone consults the same as actual appointment visits.)[75] This report contains only aggregate data and so no patient information is recorded.[76] Each medical/dental command is responsible for exporting their WWR on a monthly basis. These reports are sent to the Navy Medical Information Management Center (NMIMC) in Bethesda, Maryland and the Military Data

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[70] Military Health System Health Care Reengineering Web Site. [http://www.tricare.osd.mil/hcr/downloads/01009.doc]. Accessed December 2002.

[71] Ibid.

[72] Ibid.

[73] Ibid.

[74] World Wide Report (WWR) Frequently Asked Questions Web Site. [https://131.158.50.247/reconcile/FAQ/DQWWRFAQ.htm]. Accessed December 2002.

[75] Ibid.

[76] Ibid.

Repository (MDR).[77] Ultimately, this information is downloaded into a system known as MHS Management Analysis and Reporting Tool (MHS MART or M2) so that all DoD MTF facilities may have access to the WWR.

4. Standard Inpatient Data Record (SIDR)

The Standard Inpatient Data Record (SIDR) takes data from the CHCS and provides a summary of inpatient admissions and dispositions at the MTF.[78] The SIDR contains inpatient International Classification of Diseases-Ninth Revision (ICD-9) diagnostic coding, Diagnostic Related Groups (DRGs) and CPT coding. Indirect methods of measuring workload and clinical skills utilization can be derived from the volume and types of patients seen in an inpatient setting and are used as a part of this research. All SIDR data received for this research was sanitized (no patient level data such as names, SSNs, dates of birth, etc.) prior to transmission via email. This data was received in the format of an Microsoft Excel spreadsheet. The data that was received was in aggregate form by fiscal year and was broken out by MTF.

5. Standard Ambulatory Data Record (SADR)

The Standard Ambulatory Data Record (SADR) is a daily file that obtains information that is exported from the Ambulatory Data Module. The data entry for the Ambulatory Data Module occurs at the clinic level by the provider seeing the patient and documents information such as names, social security numbers, dates of birth, ICD-9 Codes, CPT codes, and MEPRS according to the medical service or clinic that sees the patient. "This information is used for third party billing, population health analysis and feedback, and resource sharing agreements."[79] All SADR data received for this research was sanitized (no patient level data such as names, SSNs, dates of birth, etc.) prior to transmission via email. This data was received in the format of an Microsoft Excel spreadsheet. The data that was received was in aggregate form by fiscal year and was broken out by MTF.

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[77] Ibid.

[78] Standard Inpatient Data Record (SIDR) Frequently Ask Questions web site. [https://131.158.50.247/reconcile/FAQ/DQSIDRFAQ.htm]. Accessed December 2002.

[79] Standard Ambulatory Data Record (SADR) Frequently Asked Questions web site. [https://131.158.50.247/reconcile/FAQ/DQSADRFAQ.htm#q2]. Accessed January 2003.

D. WORKLOAD AS DEFINED IN THIS RESEARCH

In his editorial entitled *Competence is a Habit* from the January 2002 issue of the Journal of the American Medical Association (JAMA), Dr. David Leach characterizes the acquisition of [clinical] skills as a developmental process, observing that "competence develops over time and is nurtured by reflection on experiences."[80] In that same issue of JAMA, Dr. Epstein and Dr. Hundert further define competence as the "habitual and judicious use of communication, knowledge, technical skills, clinical reasoning … in daily practice for the benefit of the individual and the community being served."[81] In this vein, the brothers and philosophers Hubert and Stuart Dreyfus described the Dreyfus Model of Skill Acquisition in 1980. This theory proposes that there is a continuum of skill development that occurs in 5 stages, beginning with Novice, moving next to Advanced Beginner, then Competent, and Proficient, and lastly as Expert.[82] The Navy Nurse Corps and many other nursing programs around the country base their competency levels on this model of skill acquisition.[83]

When defining "workload" in this research, it was felt that the volume of patients and quality (or types) of patients seen in Navy Medicine would serve as a proxy for a measurement of medical readiness. The old adage that "experience is the best teacher" is the premise for the analysis presented below. "Hands-on experience is undoubtedly the best method of maintaining clinical competence and must be factored into any objective measurement [of medical readiness]."[84] "Most would agree that physician competence

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[80] Leach, D.C. "Competence is a Habit." Journal of the American Medical Association. p. 243. January 2002.

[81] Epstein, R.M., Hundert, E.M. "Defining and Assessing Professional Competence." Journal of the American Medical Association. p. 226. January 2002.

[82] Benner P. "The Dreyfus Model of Skill Acquisitions applied to nursing" In: Evans, N. Lewis, E. deProssse J, editors. *From Novice to Expert, Excellence and Power in Clinical Nursing Practice.* pp. 13-38. Addison-Wesley Publishers, 1984.

[83] McNamara, K.J., Schulman, C., Jepsen, D., Cuffley, J.E. "Establishing a Collaborative Trauma Training Program with a Community Trauma Center for Military Nurses." International Journal of Trauma Nursing. p. 50. April-Jun 2001.

[84] Knuth, Thomas E. "The Peacetime Trauma Experience of U.S. Army Surgeons: Another Call for Collaborative Training I Civilian Trauma Centers". Military Medicine. p. 139. March 1996.

in the techniques of injury surgery is a key factor in maintaining readiness for the care of wartime casualties."[85]

1. Outpatient Visits and Hospital Admissions

With this understanding in mind, and with the previously stated concern of a shift in focus to ambulatory practices, the first step was to garner information on the total number of patients seen in Navy Medical MTFs over the last ten years. Data was requested and received from the NMIMC. Summary data for all facilities using the Navy Health Care Planning Matrix for Fiscal Year 1992-2002 was obtained through a Freedom of Information Act (FIOA) request to NMIMC requesting information on access to *Health Care Annual Report* (HCARE). Specifically requested was data from Fiscal Year 1992 through 2002 and information that was contained in the *Summary Tabs Report* of HCARE. All years were received except for some data for FYs 1995 and 1998 that was reported as missing from NMIMC.[86] Additionally, the complete summary for 1992 was not available. The Summary Tabs Report shows selected data from various IT systems used in Navy Medicine in a table format that allows for consistent measurement and comparison over time. A sample of the data contained in the Summary Tabs Report can be found in Appendix B.

The first measurement that was evaluated was the catchment population for each Navy Medical Facility (in the continental U.S. and overseas). The *catchment area* is defined by OASD (HA) as the five digit zip code zones whose geographic center lies within 40 miles of the center of the zip code zone in which the MTF is located.[87] The *catchment population* is based on data projections that are primarily evaluating the number of eligible beneficiaries enrolled in the Defense Enrollment Eligibility Reporting System (DEERS), the total service POM active duty end-strength projections, projected estimates of retirees by age groups obtained from OASD (HA)/HB&P, and growth rates

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[85] Smith, A. M., Hazen, S. J. "What Makes War Surgery Different?" Military Medicine. p. 33. January 1991.

[86] Email from LT Dorina Maris, FIOA Coordinator, NMIMC, dated November 7th, 2002.

[87] Naval Medical Information Center's On-Line Health Care Annual Report Web Site. "Glossary". [http://nhso.med.navy.mil/resource/homeport.htm]. Accessed November 2002.

of paid retirees as reported by the office of the DOD Actuary, adjusted for regional migration patterns computed from historical DEERS data.[88]

With the "downsizing" of the military during the early and mid-90's, it is important to consider the total number of persons whom are eligible to receive care at Navy MTF's. Using the catchment population as a "pool" for the numbers of patients eligible to be seen in a given year, an index based on this population can be generated. Table two below shows the change in overall Navy Medicine Catchment Population over the last 10 years. Note that the catchment population did not change according to the reports between the years 1993 and 1994.

Table 2. Total Catchment Population by Fiscal Year for Navy Medicine

Fiscal Year	Total Catchment Population
1992	1,942,420
1993	1,985,621
1994	1,985,621
1995	1,865,951
1996	1,608,875
1997	1,704,790
1998	Missing
1999	1,529,727
2000	1,529,974
2001	1,559,248

Source: HCARE Report

Figure 4 below is a graphical representation of Table 2 and shows the dramatic decrease in the number of beneficiaries eligible for medical care in Navy MTFs. One could hypothesize that the smaller the "pool" of eligible patients, the fewer the number of patients who will be seen in Navy Medicine over a given period of time.

[88] Ibid.

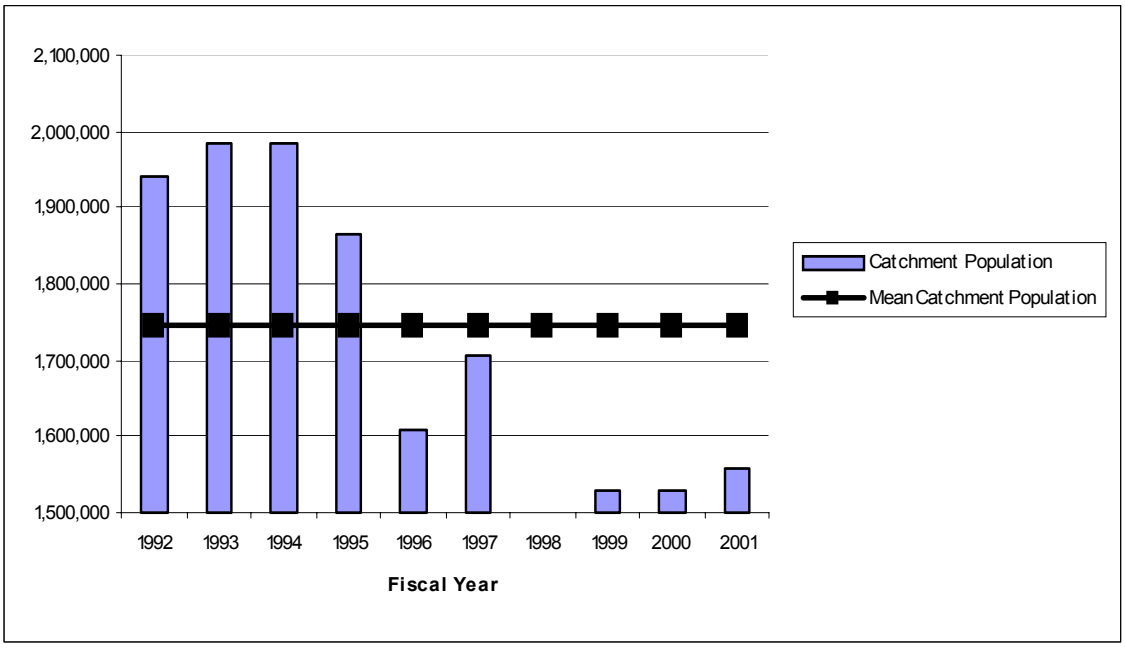

Figure 5. Summary of Total Eligible Beneficiaries for Navy Medicine.

From a high year in 1994-95 of 1,985,621 eligible beneficiaries in the catchment population to the year 2001 (1,559,248 persons), there was approximately a 27 percent decrease (426,373) in the numbers of persons eligible to be seen in Navy MTFs. Presumably, this number serves as an indirect indicator of the number of persons who exited the military and decreased accessions as a result of the "peace dividend" and military drawdown. From the outset, over the last ten years, the total number of persons eligible to be seen in Navy MTFs has reduced by a substantial amount. Fewer eligible patients does not directly indicate that there were fewer patients seen in Navy MTFs, so further data is required to assess the number of patients seen in Navy Medicine. It is also important to consider that with the implementation of TRICARE for Life, the catchment population would be expected to go up for 2002 and beyond which is not indicated here.

The Summary Tab Reports also provide the total number of outpatient visits (OPV) and admissions (ADM), among other metrics, by facility in Navy Medicine. An OPV is defined as counted for "each outpatient who presents himself/herself at an MTF for medical advice, diagnosis, treatment, or complete physical examination, or one who is

treated or observed in his home or quarters by medical personnel."[89] These OPVs are coded using the MEPRS format to assign workload and costing information for that type of outpatient visit. The Summary Tab Report does not break these visits out by codes. The data source for outpatient visits comes from the WWR. An ADM is defined as the "total number of patients admitted for treatment or observation in the hospital" and includes newborns.[90] The source for this information also comes from the WWR.[91]

It is important to note that these measures are considered "raw" measures (or simple counts) and are not weighted. Historically these un-weighted workload measures have been used in the MHS as the "gold standard." But they do not directly reflect output or productivity accurately in that they do not consider the consumption of resources, costs, or complexity of cases. These numbers do allow for following trends over time which is how they will be used in the context of this research. Table three below shows the raw metrics for all of Navy Medicine. Note that there is missing data from 1995 and 1998 OPVs and 1998 ADMs.

Table 3. Total Outpatient Visits and Admissions for Navy Medicine by Fiscal Year

Fiscal Year	Outpatient Visits	Admissions
1992	6,595,977	190,789
1993	6,697,299	183,870
1994	7,311,829	175,255
1995	Missing	159,888
1996	6,943,850	151,347
1997	6,823,864	114,578
1998	Missing	Missing
1999	5,501,744	89,021
2000	5,114,154	95,395
2001	5,111,078	93,162
Average	6,262,474	139,256

Source: HCARE Report

[89] Naval Medical Information Center's On-Line Health Care Annual Report Web Site. "Glossary". [http://nhso.med.navy.mil/resource/homeport.htm]. Accessed November 2002.

[90] Ibid.

[91] Ibid.

The graph below clarifies the magnitude of change in the number of outpatient visits for Navy Medicine from fiscal year 1992 to 2001.

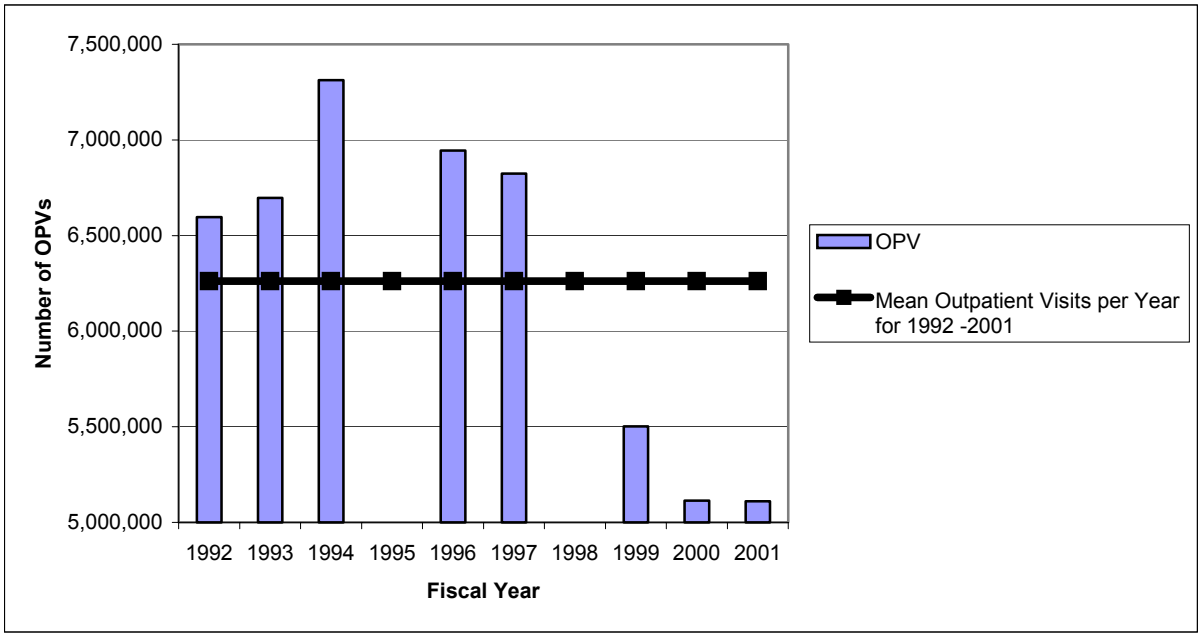

Figure 6. Total OPVs by Fiscal Year for Navy Medicine

Looking at Figure 6 above, one notices that since 1994, there has been an overall decrease in the total number of OPVs by almost 1.5 million visits. This represents approximately a 23 percent decrease in the annual OPVs from 1992 to 2001. The decrease in OPVs may be in response to the decrease in the number of eligible beneficiaries over that same period of time. In order to more clearly evaluate the number of OPVs seen in Navy Medicine, it would be more appropriate to compare these numbers using the catchment population for that same year as base. The ratio of OPVs to the catchment population will serve as an index by which the OPVs can be more accurately viewed. Figure 7 below shows these ratios per year.

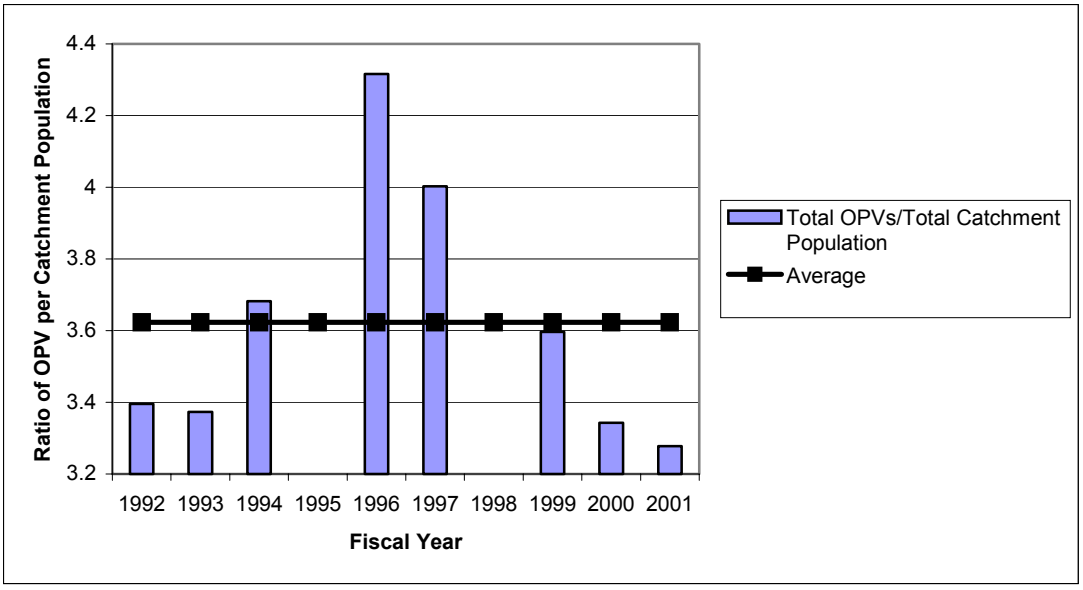

Figure 7. Ratio of Total OPVs to Total Catchment Population by Fiscal Year

When using this ratio, the number of OPVs by catchment population shows that the number of OPVs per catchment population (eligible beneficiary) averages about 3.6 OPVs per year. One can also see the increase in the number of OPVs between 1993 and 1996, followed by a sharp decrease in the number of OPVs through 2001. While these numbers alone are descriptive of the trend seen in Navy Medicine, they do not show causality. While this is beyond the scope of this thesis, I propose two theories here to explain these changes. As the drawdown in the military was instituted during the early to mid-1990's, persons who were leaving the military were required to complete their out-processing. Part of that process requires medical exams and evaluation to ensure that a healthy individual is leaving the service. This may partially account for the increase in OPVs.

In addition, it was during the early to mid 1990's that the implementation of TRICARE was in full swing and there was a push to proactively manage the health of the population that Navy Medicine served (in the same vein as a true Health Maintenance Organization). This effort placed an emphasis on preventive health care initiatives that encouraged beneficiaries to see their health care providers to become proactive participants in their health maintenance. Both of these events could have encouraged the increase in OPVs through 1996. The steadily decreasing trend seen after 1996 may be

also explained by the implementation of TRICARE in that the TRICARE program's different health plans allow eligible beneficiaries to be seen "outside" of the Navy's MTFs in the civilian sector.

Again this is conjecture, but may give a possible explanation as to why there has been a decrease in the number of OPVs per year per eligible beneficiary. In the final analysis, it appears that, on average, there are fewer patient visits (OPVs) in 2001, per eligible beneficiary in Navy MTFs when compared to 1992.

Figure 8 below gives a graphical representation of the total admissions seen in Navy MTFs found in Table 3 above.

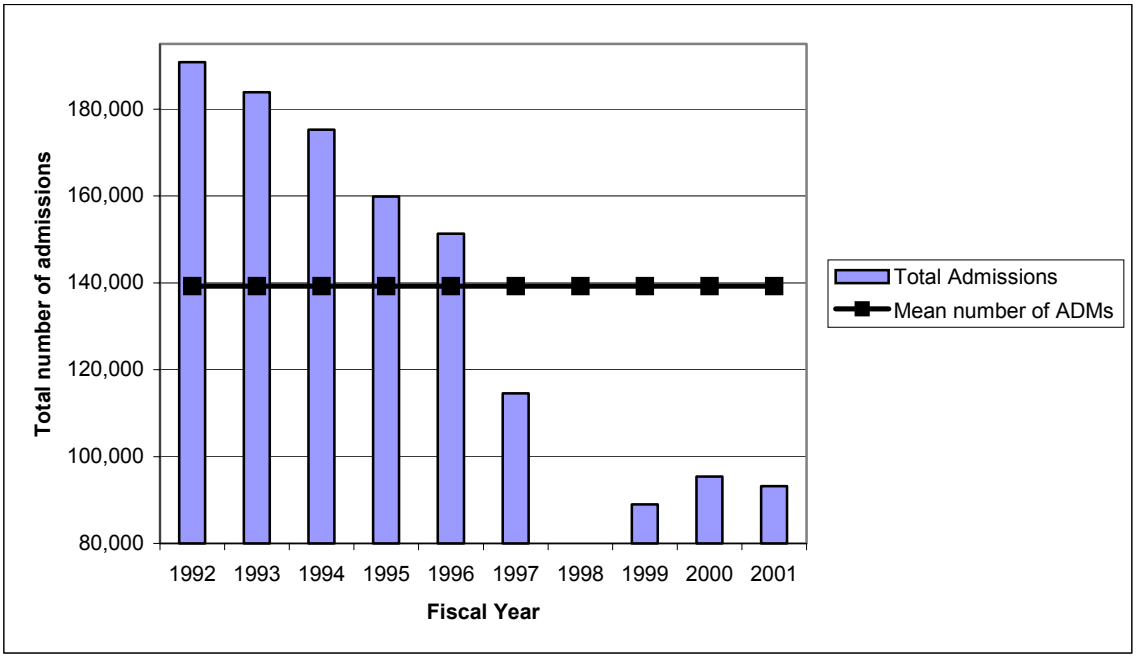

Figure 8. Total ADM by Fiscal Year for Navy Medicine

Similar to the OPVs, the total number of patient ADMs per year to Navy MTF's has seen a decreasing trend over the last ten years. There were 97,627 fewer hospital ADMs in Navy Medicine when comparing 1992 to 2001. This represents over a 51 percent decrease in the number of ADMs over this same time period when measured on an annual basis. This may be in response to the corresponding decrease seen in eligible beneficiaries (or catchment populations) seen in Table 2. To place these total numbers of ADMs on a more level playing field, a better method of annual comparison would be to

index the total yearly ADMs to the total catchment population. Figure 9 below shows the ratio of ADMs per year to the catchment population. Said another way, Figure 9 shows the percentage of admissions to Navy MTFs per eligible beneficiary (person) by year. The mean ratio line indicates that on average, over the last 10 years, there have been approximately 7.8 admissions per 100 persons in the catchment population.

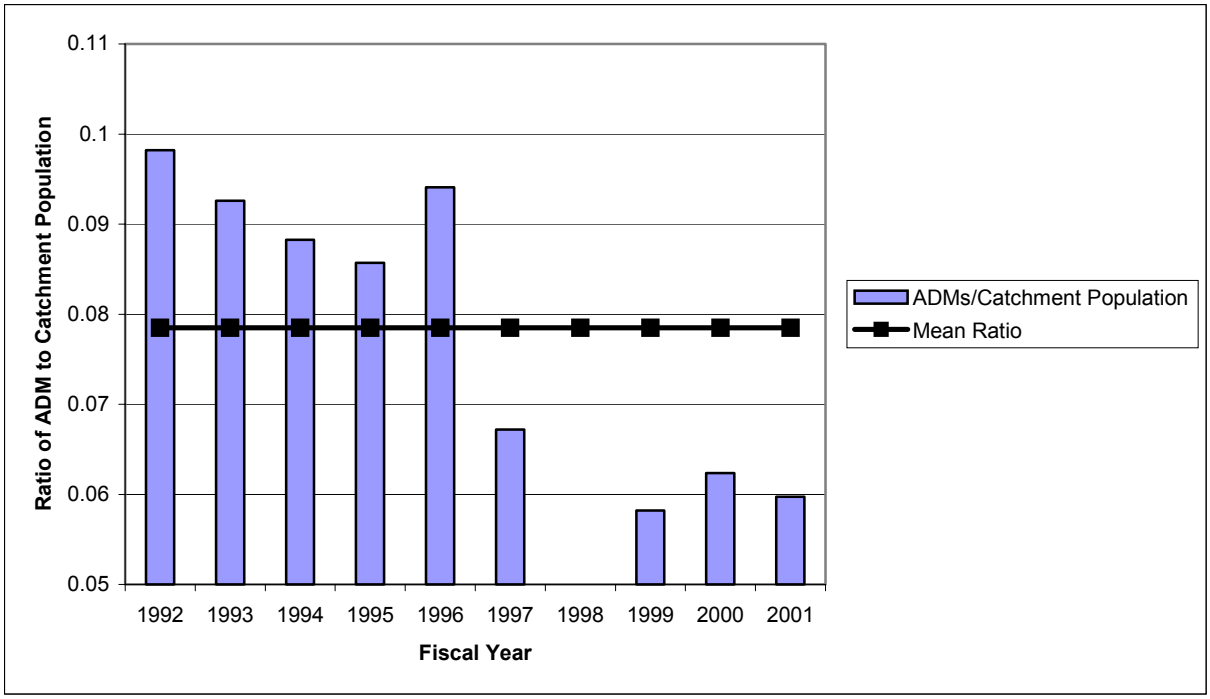

Figure 9. Ratio of Total ADMs to Total Catchment Population by Fiscal Year

Generally, not only has there has been a decrease in the raw number of hospital admissions in Navy Medicine as seen in Figure 8 above, but also there has been a decrease in the number of admissions per eligible beneficiary as seen in Figure 9. This is good from an economic and resource standpoint in that hospital admissions are expensive and require a lot of clinical, material and administrative resources. But from a workload/readiness standpoint, the decrease in patient admissions may mean less experience for Navy Medicine's clinical providers. In the context of this research, the decrease in workload per provider cannot be ascertained, as we have not yet evaluated the

force structure of Navy Medicine over this same time period. The next chapter will further analyze this issue.

To summarize the above section, it was argued that to remain competent from a clinical perspective, it is important for practitioners to practice their trade. Using the Dreyfus Model as a guide, "moving from advanced beginner to competent means less detachment and greater immersion in particular contexts."[92] The information provided above illustrates that the "pool" of persons eligible for treatment in a Navy MTF within all of Navy Medicine's Catchment Areas over the period from 1992 to 2001 has shrunk by almost 20 percent. A corresponding decrease in OPVs by approximately 23 percent is observed during this same time period. The overall decrease in ADMs during this same time frame was significantly different, with over 51 percent fewer admissions. Figure 10 below shows a graphical representation of these numbers.

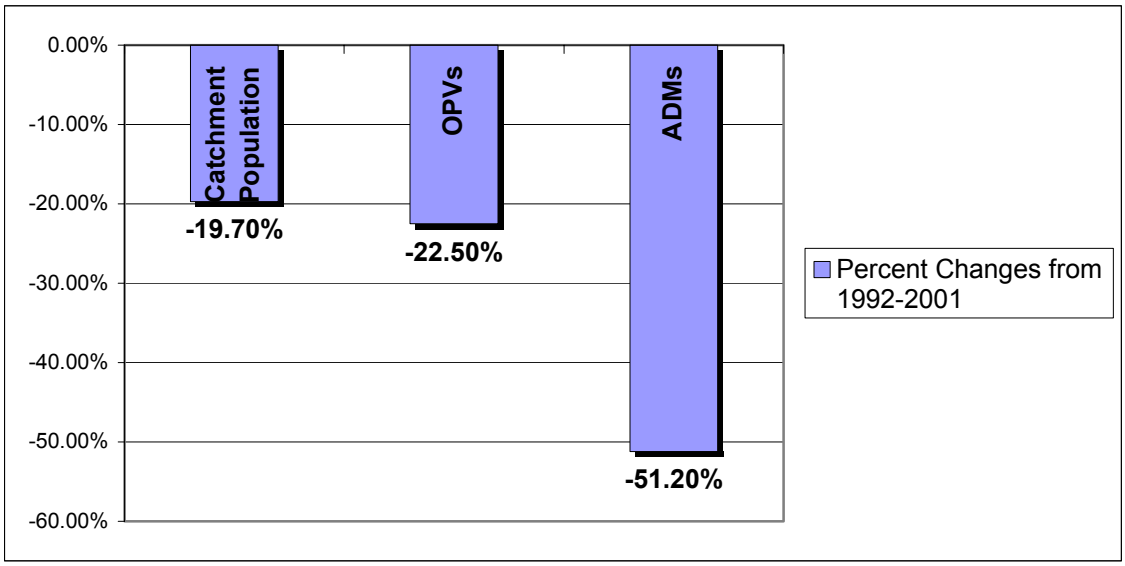

Figure 10. Overall Comparison of the Change in Catchment Population, OPVs, and ADMs from 1992-2001

This decrease in patient admissions suggests that the number of opportunities for clinical experience in the inpatient and outpatient arena has declined over the last decade, and consequently the chances to develop the skills that may be needed during wartime

[92] Leach, D.C. "Competence is a Habit". Journal of the American Medical Association. p. 243. January 2002.

and move along the continuum to being a more competent provider have also diminished. The problem here is that the "quality" or the type of workload (Internal Medicine Admissions vs. Surgical Admissions vs. Pediatric Admissions) has not been established. The next section will attempt to further "qualitize" or describe the type of inpatient or ADM workload seen from 1999-2002. Because the same data could not be obtained prior to 1999, we will do a quick comparison of catchment population, OPVs and ADMs for 1999-2001 using the data found in Tables 2 and 3.

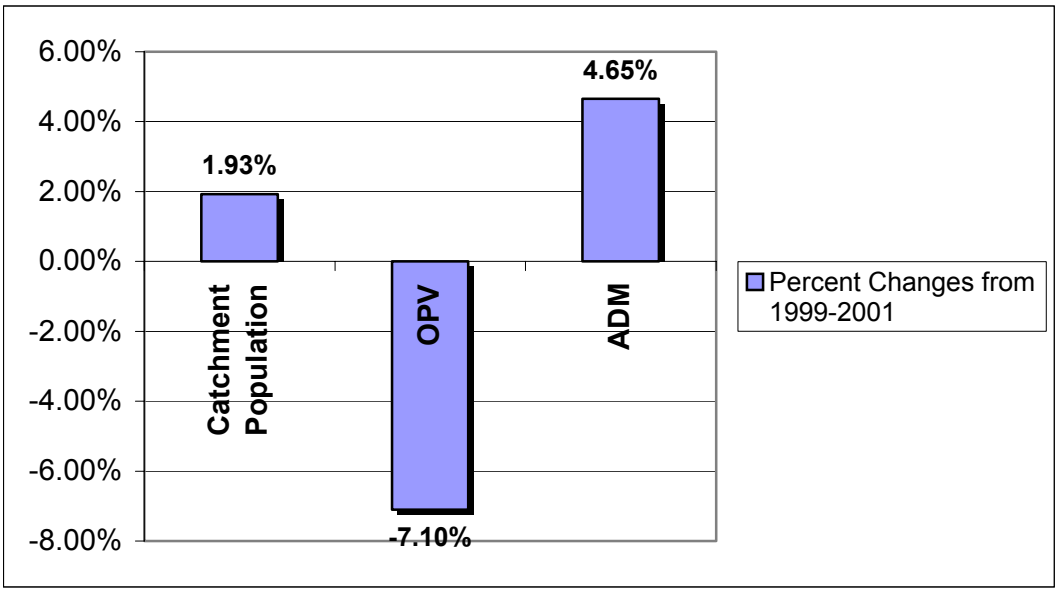

Figure 11. Overall Comparison of the Change in Catchment Population, OPVs, and ADMs from 1999-2001

This shorter time period trend shows that the catchment population has increased by almost 2 percent, OPVs have decreased by 7 percent while hospital admissions have increased almost 5 percent. It could be that this is shows a reversal in trends that were shown in Figure 10 above over the last decade. This can serve as a starting point for further research.

2. Describing the Type of Workload Seen in the Inpatient Areas

Data was requested from NMIMC that would identify the ADMs for Navy Medicine using MEPRS codes to identify where the workload was actually assigned for the years 1992-2001. Because of the technological difficulty (IT systems are different

now than what was used in years past) of obtaining data prior to 1999, I was only able to receive MEPRS data from 1999-2002. The data received breaks down the workload by three methods. The first two methods are raw workload measures and the third is a weighted workload measure. Raw workload measures usually represent outputs or simple calculations that are collected by the MTFs.

The first measurement method is *Total Dispositions* – which is defined as "the removal of a patient from a hospital's census by reason of discharge, transfer, death, or other termination of inpatient care."[93] The second measure is *Days in Hospital, Total* or *Total Hospital Days* which is the total number of days a patient is assigned to a specific MEPRS code (medical service or work center). Lastly the *Relative Weighted Product* (RWP) is the measure of workload "derived from biometric dispositions"[94] and "is a measure of the relative resource consumption of a patient's hospitalization as compared to that of other patients."[95] The source of this data comes from the Standard Inpatient Data Record (SIDR) as described in the previous section.

With MEPRS coding, each workload measure is initially assigned a functional category, in this case "A" for Inpatient Care. A secondary summary account or second level MEPRS code is given for a summary account to further itemize the workload. A third level code can be assigned to decompose the workload to a specific clinical area or sub-account. As a starting point, we will analyze the various workload measurements for the selected the inpatient summary accounts or second level MEPRS codes for Inpatient Medical Care (AA), Inpatient Surgical Care (AB), Inpatient Obstetrical and Gynecological Care (AC), Inpatient Pediatrics (AD), Inpatient Orthopedic Care (AE), and Inpatient Family Practice (AG). The table below gives a summary of three workload indicators by second level MEPRS codes by *Total Dispositions.*

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[93] Coventry, J., et al. *MHSS Workload Primer: Reference Guide to MHSS Workload Measurement Terminology.* Systems Research and Applications (SRA) Corporation. [http://www.tricare.osd.mil/tma/hpae/primword.html]. Accessed December 2002.

[94] Ibid.

[95] Ibid.

Table 4. Summary of Inpatient Workload by Second Level MEPRS for Fiscal Years 1999-2002 for Total Dispositions

	1999	2000	2001	2002	% Change, FY 99 - 02
Medical Care (AA)	15,264	16,174	16,616	17,197	+ 12.6
Surgical Care (AB)	15,400	15,338	14,380	13,467	- 12.5
OB/GYN (AC)	20,808	22,399	21,817	22,503	+ 8.1
Pediatrics (AD)	20,928	21,981	21,284	22,180	+ 6.0
Orthopedic Care (AE)	5,241	5,063	4,736	4,042	- 22.8
Family Practice (AG)	10,077	10,653	11,210	11,463	+ 13.8
Other Dispositions	3,943	3,880	3,881	3,435	-12.8
Total	91,661	95,488	93,924	94,308	+2.9

Source: SIDR

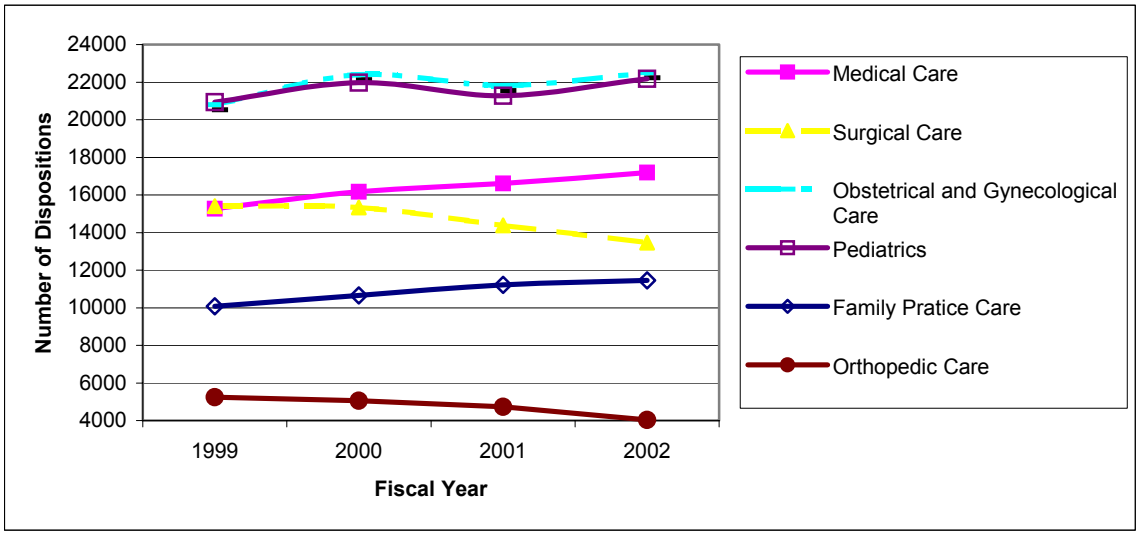

Figure 12. Total Number of Dispositions by Type of Medical Service

An initial look at Figure 12 above clearly shows that the bulk of recorded dispositions occur in the OB/GYN and Pediatric work centers. Also notice the close correlation between the two. This correlation occurs because these trend lines capture pregnant mothers for the OB/GYN work center and newborns for the Pediatric work center. Generally, the patients seen in these areas are relatively healthy and once the

delivery is complete, and the newborn is stabilized, the workload is not intensive. This measure does not capture the intensity or weighted work associated with the care of new mothers and newborns, but merely the volume of work. The majority of "Other Dispositions" listed above fall under psychiatric care and are not evaluated in this research.

The other notable trend that is readily apparent is that all the work centers except for the Surgical Care and Orthopedic Care work centers appear to have either relatively flat or slightly increasing volume according to the raw measure of dispositions from FY 1999 to 2002. This decrease in patient volume for the surgical services and orthopedic services may represent the continuing increasing trend towards surgical care being provided as outpatient surgeries, producing a decrease in the volume of inpatient admissions and dispositions related to the surgical conditions.

In contrast to the previous measure of total dispositions, the measure of output/workload shown in Table 5 and Figure 13 for *Total Hospital Days* indicates that the Pediatrics and Medical Care services have patients who spent the most number of days in Navy hospitals for the years 1999-2002.

Table 5. Summary of Inpatient Workload by Second Level MEPRS for Fiscal Years 1999-2002 for Total Hospital Days by Type of Medical Service

2nd Level MEPRS Code Description	1999	2000	2001	2002	% Change, FY 99-02
Medical Care (AA)	59,758	64,132	64,820	66,693	+ 11.6
Surgical Care (AB)	52,730	51,991	48,724	46,216	- 12.3
OB/GYN (AC)	51,206	55,998	54,492	57,127	+ 11.6
Pediatrics (AD)	62,533	66,597	65,109	68,648	+ 9.8
Orthopedic Care (AE)	15,080	15,947	15,558	13,734	- 8.9
Family Practice (AG)	23,680	25,162	29,087	26,260	+ 10.9
Other Hospital Days	29,283	27,279	24,210	19,930	-31.9
Total	294,269	307,107	301,998	298,608	+1.4

Source: SIDR

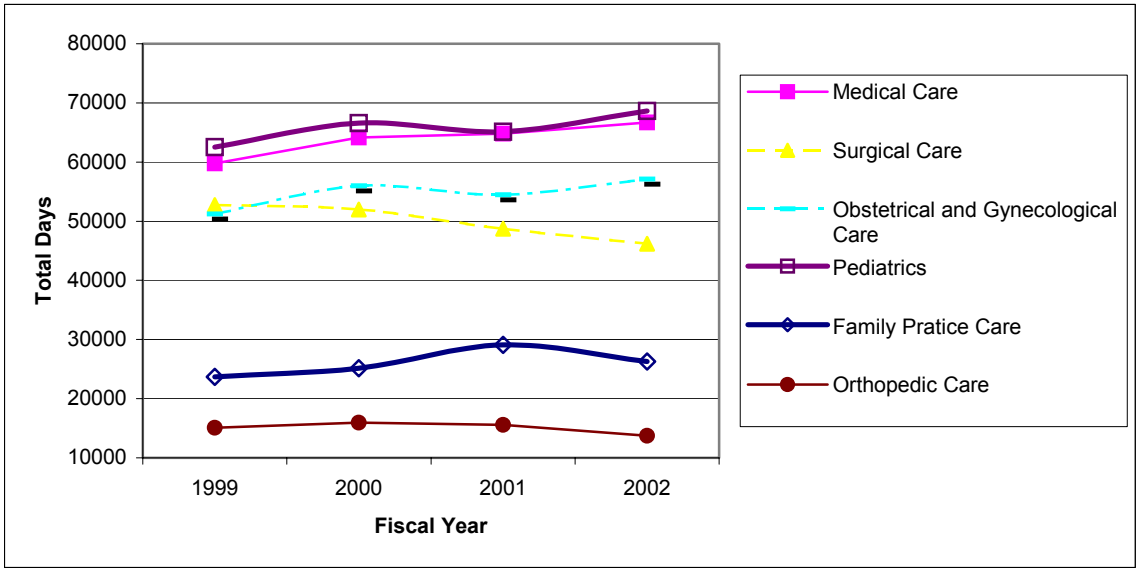

Figure 13. Total Days in Hospital by Type of Medical Service

Consistent with the previous measure of total dispositions, the only services that have a decreasing trend of total days in the hospital over the last four years are the surgical and orthopedic services. Again, this may be due to the trend toward outpatient surgery that would not be captured by this measurement. In terms of patient care experience, further information would be needed to determine if the type of outpatient surgeries performed enhance the skills that would be necessary in treating the casualties of war. It can be inferred that because the number of surgical types of patients is going down, those who care for these patients (primarily the nurses and ancillary staff) in the inpatient areas will have less exposure and experience treating these types of patients. This may adversely affect the medical readiness of those individuals to treat surgical types of patients.

The" Other Hospital Days" is primarily psychiatric hospital days. It can be seen that there has been a significant reduction in the number of days a psychiatric service has kept patients in the hospital.

Lastly, as a weighted measure of workload for the inpatient area, the Relative Weighted Product (*RWP*) was used to identify trends. Recall that the RWP is a measure of resource consumption of a patient's hospitalization as compared to that of other patients and serves as a weighted measure that reflects patient complexity and the length

of stay. Table 6 and the figure below show the RWP for all of Navy Medicine from 1999-2002. These values were rounded to the nearest whole number.

Table 6. Summary of Inpatient Workload by Second Level MEPRS for Fiscal Years 1999-2002 for Relative Weighted Product (RWP) by Type of Service

	1999	2000	2001	2002	% Change from FY 99-02
Medical Care (AA)	17,754	18,996	18,669	19,766	+ 11.3
Surgical Care (AB)	22,156	21,148	19,725	18,225	- 17.7
OB/GYN (AC)	12,418	13,331	12,885	13,226	+ 6.5
Pediatrics (AD)	10,962	11,610	10,347	10,809	- 1.4
Orthopedic Care (AE)	7,079	6,779	6,371	5,705	- 19.4
Family Practice (AG)	4,934	5,366	5,630	5,657	+14.7
Other RWP	3,097	2,070	2,076	1,949	-37.1
Total	78,402	80,003	76,336	75,352	-3.9

Source: SIDR

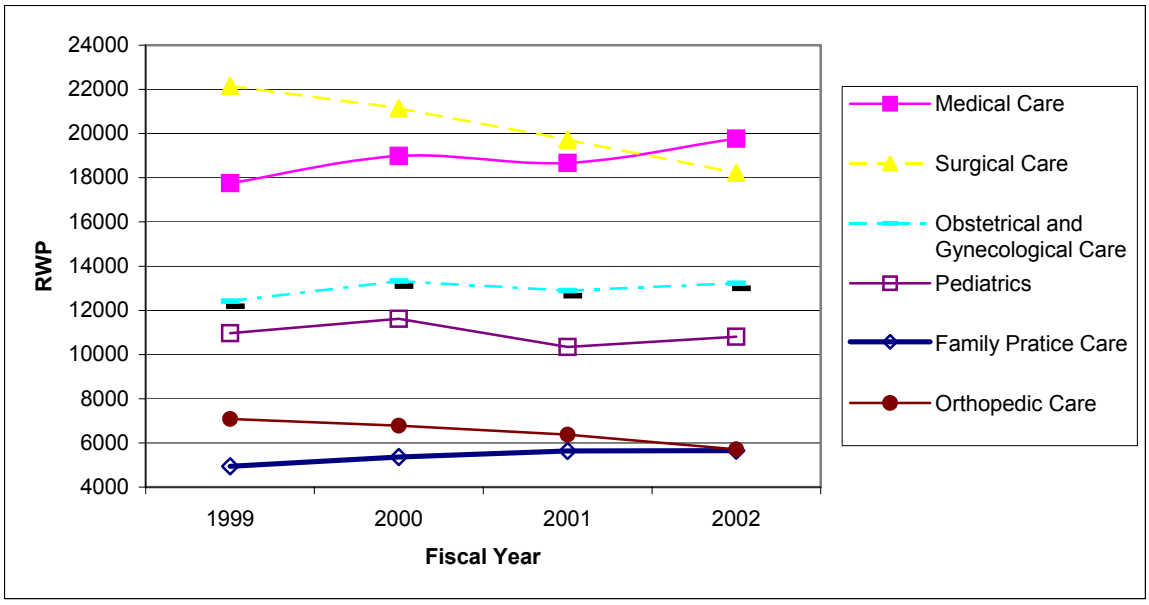

Figure 14. Relative Weighted Product of Workload by Medical Service for FY 1999-2002

This weighted measure of *RWP* provides an interesting contrast to the previous two un-weighted measures. When looking at the resources consumed and complexity of the patients, both the surgical and medical care workload consume more. As observed earlier, the OB/GYN and Pediatrics services may have more total dispositions, but when weighted against the type of patients, the most complex patients, on average, are seen by the surgical and medical services. Additionally, even this weighted measure shows a declining amount of inpatient workload (- 17.7%) over the four-year period of 1999-2002 for the surgical services, which on this weighted scale, is more significant than the raw measures above. Also for Orthopedic Care, there has been a 19.4 percent decrease in the *RWP* over the four years described above. This may reflect technological advances and the medical policy decision to treat patients more on an outpatient basis.

To summarize the above section that analyzed the trend of inpatient care in Navy Medicine from the years 1999 to 2002, it is clear, whether looking at simple, raw measures or weighted measures, that the only services that have seen a consistent decrease in inpatient workload are the Surgical and Orthopedic services. If mortality data from the Persian Gulf region are an indicator of incidence of injury, then 91.7 percent of deaths "occurred as a direct result of combat during the war"[96] (39.5 percent) or from injuries not associated with battle (52.2 percent). The types of traumatic combat casualties that are most likely to be encountered on the battlefield are those that would most require the skills of a general or orthopedic surgeon. "History has repeatedly demonstrated that 60 – 70 percent of surviving injuries from war are those of the extremities."[97] Additionally, the decrease in surgical inpatient admissions reduces the number of clinical experiences to which the nursing staff is exposed and may reduce opportunities to develop crucial clinical skills. It would be a leap to say that this decrease in workload adversely impacts the medical readiness of Navy Medicine; however it is clear that there has been a decline in inpatient surgical workload and this may warrant

[96] Writer, James, DeFraites, Robert, et al. *Comparative Mortality Among U.S. Military Personnel in the Persian Gulf Region and Worldwide During Operations Desert Shield and Desert Storm.* p. 118. Journal of the American Medical Association. January 1996.

[97] Smith, A. M., Hazen, S. J. "What Makes War Surgery Different?" p. 35. Military Medicine. January 1991.

further evaluation and analysis. To see a summary of data used for this analysis, refer to Appendix C.

To see what has happened in the outpatient arena in Navy Medicine from 1999-2002, the following section will describe and analyze the workload experience of outpatients.

3. Describing the Type of Workload Seen in the Outpatient Areas

Data was requested from NMIMC that would identify the workload for outpatient clinics in Navy Medicine using MEPRS codes for the years 1992-2002. The current decision support system, MHS MART (M2) is only able to retrieve MEPRS data back to 1999. Because of this constraint, I was only able to receive MEPRS data from 1999-2002. The data received breaks down the workload by two methods. The first method is a raw workload measure, *Visits, Raw*, or *Raw Visits*, while the second measure is a weighted workload measure, *Simple RVU.*

The first measurement method, *Raw Visits,* is defined as the "count of the number of visits encounter derived from the total treatment" during a patient visit.[98] In simplistic terms, it is the number of times a patient visited a specific medical service or provider. This visit is recorded and the MEPRS workload data is assigned to that medical service. The second measure, *Simple RVU,* is the summation of all relative value units (RVUs) of all CPT codes in an encounter, with no adjustments of any kind."[99] An RVU "is used by Medicare and other third party payers to determine the comparative worth of physician services based on the amount of resources involved in furnishing each service."[100] Each procedure is described in the Current Procedural Terminology (CPT) manual as outlined by the American Medical Association. This manual provides standardized, specific and descriptive details of each procedure and allow for consistent billing according to these

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[98] M2 Data Dictionary as of December 2002, Outpatient Tab. [http://eidsportal.ha.osd.mil:9999/hrnp$30000/EIDSPORTAL.HA.OSD.MIL:9999/Action/26011[portal]] – Accessed December 2002.

[99] Ibid.

[100] Daugird, Allan, "Call RVUs: One Way to Make Call More Equitable", p. 32. Family Practice Management. June 2002.

CPT codes.[101] The source of this data set comes from the Standard Ambulatory Data Record (SADR) as described in the previous section and represents all Navy MTFs for fiscal year 1999-2002.

Similar to the inpatient side of workload measurement, there are MEPRS codes assigned to each "clinic" in the outpatient arena. Each workload measure is initially assigned a functional category, in this case "B" for Outpatient Care. A secondary summary account or second level MEPRS code is given for a summary account to further itemize the workload. A third level and fourth level code is assigned to decompose the workload to a specific clinical area or sub-account. The data set from NMIMC was received in Microsoft Excel format, by fiscal year, by Navy Military Treatment Facility. This data was further organized into aggregate data by the second, third, and fourth level MEPRS codes by year for all of Navy Medicine. The resulting aggregation allowed for easy summation of total workload measures for the year by clinic.

As a starting point, we will analyze the various workload measurements for the selected outpatient summary accounts or second level MEPRS codes for outpatient. The table below shows the relationship between the MEPRS Code and the outpatient clinic.

Table 7. Summary of Second Level MEPRS Codes by Treatment Service

	MEPRS Code	Outpatient Clinic
1.	BA	Medical Care
2.	BB	Surgical Care
3.	BC	OB / GYN
4.	BD	Pediatrics
5.	BE	Orthopedics
6.	BF	Psychiatric and Mental Health
7.	BG	Family Practice
8.	BH	Primary Medical Care
9.	BI	Emergency Medical Care
10.	BJ	Flight Medicine Care
11.	BK	Undersea Medical Care
12.	BL	Rehabilitative Ambulatory Services

Source: MEPRS Manual[102]

[101] Ininns, Graham D., *Applying Resource Based Relative Value Scales (RBRVS) to the CHAMPUS Program.* p. 5. Masters Thesis. Naval Postgraduate School. Monterey, California. December 1990.

Once the data was aggregated by year and second level clinic, a summary table was built to display this data by workload measures. The table below shows the summary table by *Total Raw Visits.* Three MEPRS codes (BT, BX, and BZ) and associated data were left off of this table for evaluation as there was either little or no data for these clinics and there were no associated definitions for these clinics in the MEPRS Manual or the M2 Data Dictionary.

Table 8. Sum of Total Raw Visits by Medical Service for Outpatient Care

2nd Level MEPRS CODE	Treatment Service Clinic	1999	2000	2001	2002	% Change, 1999-2002
BA	Medical Care	645,953	744,270	858,287	932,298	44.3%
BB	Surgical Care	439,233	471,728	488,936	534,924	21.8%
BC	Obstetrical and Gynecological Care	468,506	451,306	507,397	559,001	19.3%
BD	Pediatrics Care	419,950	422,861	528,835	569,620	35.6%
BE	Orthopedics Care	315,429	355,854	333,636	375,505	19.0%
BF	Psychiatric and Mental Health Care	299,711	338,783	397,973	433,309	44.6%
BG	Family Practice Care	682,176	866,169	1,097,798	1,27,1845,	86.4%
BH	Primary Medical Care	2,662,081	2,568,472	2,766,248	2,923,320	9.8%
BI	Emergency Medical Care	402,376	425,843	478,793	499,797	24.2%
BJ	Flight Medicine Care	87,099	105,155	122,192	144,589	66.0%
BK	Undersea Medicine Care	18,589	30,153	42,268	43,544	134.2%
BL	Rehabilitative Ambulatory Services	421,924	475,132	520,907	544,585	29.1%
	Grand Total	6,863,027	7,255,726	8,143,270	8,832,337	28.7%

Source: SADR

An initial glance at the table above reveals that every single outpatient clinic has experienced a double-digit increase in total visits from 1999-2002. Despite a relatively stable catchment population over the same time period, there has been a dramatic increase (28.7 percent) in the number of outpatient visits. This would possibly reflect the continuing trend toward the outpatient treatment and management of patients. So while the selected overall *RWP* for inpatients as described in the previous section for the same

[102] *Assistant Secretary of Defense for Health Affairs. DoD 6010.13-M:* Medical Expense and Performance Reporting System for Fixed Military Medical and Dental Treatment Facilities. *November 2001.*

time period has decreased by 4 percent, there has been a overall corresponding increase in outpatient visits by 28.7 percent.

To look at a weighted version of this outpatient surgical workload, the table below shows the *Sum of Simple RVU* measure for this increase and how it differs from a raw measure. MEPRS codes for which there was no definition or substantial data were eliminated from this summary table and not included in this analysis.

Table 9. Sum of Simple RVUs by Medical Service for Outpatient Care

2nd Level MEPRS Code	Treatment Service Clinic	1999	2000	2001	2002	% Change, 1999 - 2002
BA	**Medical Care**	724,379	857,642	969,421	989,827	36.6%
BB	**Surgical Care**	713,771	724,439	726,923	802,610	12.4%
BC	**Obstetrical and Gynecological Care**	739,273	751,212	924,360	877,371	18.7%
BD	**Pediatrics Care**	330,246	375,241	447,448	461,233	39.7%
BE	**Orthopedics Care**	433,542	479,357	449,759	501,544	15.7%
BF	**Psychiatric and Mental Health Care**	684,479	801,394	934,863	981,523	43.4%
BG	**Family Practice Care**	529,261	687,505	829,857	910,175	72.0%
BH	**Primary Medical Care**	2,401,035	2,491,319	2,696,294	2,638,552	9.9%
BI	**Emergency Medical Care**	412,437	444,508	501,642	534,175	29.5%
BJ	**Flight Medicine Care**	93,783	114,477	127,224	140,407	49.7%
BK	**Undersea Medicine Care**	21,454	30,627	35,518	21,772	1.5%
BL	**Rehabilitative Ambulatory Services**	464,020	564,883	691,494	709,276	52.9%
	Grand Total	7,552,793	8,322,634	9,334,995	9,568,488	26.7%

Source: SADR

This table illustrates that, with the exception of Undersea Medicine, all outpatient service clinics have seen at least a ten percent increase in weighted workload. Particularly noticeable are the increases in the work centers BG, BL, BJ, BF, BD, BA, and BI. These clinic areas have seen a 30 percent increase between 1999 and 2002.

To drill down further, notice the 22 percent increase in surgical care as an un-weighted measure and the 12 percent increase when using the weighted measure. From the information provided, it is not evident as to which specific surgical clinics are

providing the bulk of surgical care. In an effort to clearly identify the specific type of surgical care provided over this time period, an evaluation of the third level MEPRS code must occur. This will enable us to better understand the distribution of workload relative to overall surgical care. The table below looks at the how the surgical workload by *Total Raw Visits* in the various outpatient clinics was divided up from 1999-2002.

Table 10. Sum of Total Raw Visits by 3rd Level MEPRS Codes for Surgical Care from 1999 - 2002

3rd Level MEPR CODE	Description of Surgical Clinic	1999	2000	2001	2002	% Change 1999-2002
BBA	**General Surgery Clinic**	104,716	106,217	108,045	119,746	14.4%
BBB	**Cardio/Thoracic Surgery Clinic**	2,758	3,151	2,991	3,070	11.3%
BBC	**Neurosurgery Clinic**	11,681	11,280	17,111	20,726	77.4%
BBD	**Ophthalmology Clinic**	99,628	104,137	109,338	129,933	30.4%
BBF	**Otolaryngology Clinic**	109,055	120,652	119,463	115,146	5.6%
BBG	**Plastic Surgery Clinic**	10,992	17,840	20,245	18,110	64.8%
BBH	**Proctology Clinic**	2,283	2,166	2,791	2,277	- 0.3%
BBI	**Urology Clinic**	68,694	70,898	76,526	83,596	21.7%
BBJ	**Pediatric Surgery Clinic**	3,156	4,337	3,648	4,773	51.2%
BBK	**Peripheral Vascular Surg Clinic**	12,437	13,369	13,105	12,500	0.5%
BBL	**Pain Management Clinic**	13,753	17,679	15,673	18,874	37.2%
BBM	**Vascular & Interventional Radiology Clinic**				118	
BBZ	**Surgical Clinics Cost Pool**	80	2		6,055	7468.8%
	Grand Total	439,233	471,728	488,936	534,924	21.8%

Source: SADR

When looking at this data, it is important to look for some emerging trend. The third level MEPRS code of BBZ (Surgical Clinics Cost Pool) identifies a work center designated to capture workload metrics that cannot be assigned to any other work center (surgical subspecialty). The values attributed to this work center do not provide any value to the current analysis and will not be considered. It is also important to note that this data includes Ambulatory Procedure Visits (APV) and/or same day surgery visits. Given that, it appears that the top five increases in patient volume by surgical clinic occur in the

Neurosurgery clinic (77.4 percent), Plastic Surgery clinic (64.8 percent), Pediatric Surgery clinic (51.2 percent), Pain Management clinic (37.2 percent), and Ophthalmology clinic (30.4 percent).

It is difficult to generalize from the data given, and this analysis does not consider the possibility of changes in coding methodology or data quality issues that may be present. However, it could be argued that the major increases noticed in the surgical area, as a total percentage, have occurred in specialty clinics whose surgeons and staff may be less likely to provide the type of combat surgical care patients may need during wartime. Conversely, it can also be argued that the physicians who work in these various clinics have similar initial training and some have specialized trauma training.

But one of the questions that must be considered is how recent or current that trauma training is. Previous anecdotal evidence demonstrates that while there were many surgeons onboard the hospital ship U.S.N.S *Comfort* during the Gulf war, only 10 percent of the specialists on the *Comfort* had any recent trauma experience. According to Ochener, et al., many of the physicians were trained during their residency to treat serious casualties. Since that time though, few had actually seen or managed seriously injured patients. This lack of experience with severely wounded casualties necessitated refresher training for these physicians and their staffs.[103]

In keeping with the assessment of professional competence as described by Epstein and Hundert previously, there are several dimensions to this assessment which must be considered. These dimensions of professional competence include cognitive, technical, integrative, context, relationship and habits of mind.[104] It is in the dimension of technical skills, such as physical examination skills and surgical/procedural skills that decreased workload and adequate case mix may impact "readiness." From the data presented above, it appears that the specialty clinics (neurosurgery, plastic and pediatric surgery, and ophthalmology) are seeing the largest proportion of increases in workload. Epstein and Hundert argue that "experience does not necessarily lead to learning and

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[103] Ochener, M.G., Harviel, J.D., Stafford, P.W., et al. *Development and organization for casualty management on a 1,000-bed hospital ship in the Persian Gulf.* Journal of Trauma. April 1992.

[104] Epstein, R.M., Hundert, E.M. "Defining and Assessing Professional Competence." p. 227. Journal of the American Medical Association. January 2002.

competence",[105] but Knuth counters that "current clinical competence is implicitly related to an ongoing exposure and [an active] trauma practice."[106]

Furthermore, the dimensions of context (clinical setting and use of time) and relationship (communication skills, conflict resolution, and teamwork) are key aspects to developing professional competence.[107] The question that remains unanswered is whether these specialty cases provide the Navy medical team with the ongoing skills and exposure to the type of patients that develop and/or maintain wartime readiness competence. If not, then this data may indicate a widening gap between the skills used in peacetime Navy Medicine and their relevance to the skills that may be required during wartime.

It is not uncommon to use physicians as proxies in medical studies to evaluate case and patient load. Much of the medical care and workload provided center on the number of doctors and the types of patients they see. It is important to note that if the increase in outpatient population is now substituting for what used to be done on an inpatient basis, the entire staff (nurses, corpsmen and others) is missing experiences that may prove valuable to the care of those injured in wartime/combat scenarios.

By sheer volume, it becomes apparent that, on average between 1999-2002, the Otolaryngology, Ophthalmology, General Surgery, and Urology clinics saw more patients (85 percent of total visits, on average, over the four years) than the other clinics. It is also evident that between 1999 and 2002, there has been almost a 22 percent increase in outpatient volume for the surgical services. Compare this to the 17.7 percent decrease in weighted (*RWP*) surgical workload as seen in the previous section and it is possible to see the migration away from the inpatient area and into outpatient area work centers. As this volume includes initial appointments for surgical consults, follow up appointments, same day surgery visits, etc. it is difficult to get an idea of the complexity or type of visits these represent. To better evaluate this, a weighted measure, Simple RVUs by surgical clinic was used.

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[105] Ibid.

[106] Knuth, Thomas E. "The Peacetime Trauma Experience of U.S. Army Surgeons: Another Call for Collaborative Training in Civilian Trauma Centers". p. 139. Military Medicine. March 1996.

The next table below shows the sum of Simple RVUs by 3rd Level MEPRS codes. This table shows the sum of the relative value of each procedure (CPT) performed during a visit for each of the surgical services. These values were rounded to the nearest whole number.

Table 11. Total *Simple RVU* by 3rd Level MEPRS Codes for Surgical Care from 1999 - 2002

3rd Level MEPRS Code	Description of Surgical Clinic	1999	2000	2001	2002	% Change, 1999-2002
BBA	**General Surgery Clinic**	166,593	159,890	165,642	175,451	5.32%
BBB	**Cardio/Thoracic Surgery Clinic**	3,353	3,816	3,393	3,615	7.83%
BBC	**Neurosurgery Clinic**	19,036	17,785	23,466	32,352	69.95%
BBD	**Ophthalmology Clinic**	171,874	168,456	164,115	191,444	11.39%
BBF	**Otolaryngology Clinic**	180,404	187,395	184,265	184,102	2.05%
BBG	**Plastic Surgery Clinic**	23,577	31,549	29,049	29,781	26.31%
BBH	**Proctology Clinic**	6,054	5,114	6,0545	5,874	-2.98%
BBI	**Urology Clinic**	99,929	100,761	103,038	115,408	15.49%
BBJ	**Pediatric Surgery Clinic**	3,9456	5,053	4,271	6,268	58.85%
BBK	**Peripheral Vascular Surg Clinic**	16,139	17,255	19,744	19,725	22.22%
BBL	**Pain Management Clinic**	22,193	27,357	23,884	33,870	52.61%
BBM	**Vascular & Interventional Radiology Clinic**				1,088	
BBZ	**Surgical Clinics Cost Pool**	673	8		3,633	439.72%
	Grand Total	713,771	724,439	726,923	802,610	12.45%

Source: SADR

Similar data for the Orthopedic Care Clinic (BEA) shows a slight decrease in weighted outpatient workload of -.54 percent.

Again, for this analysis, we will toss out the Surgical Clinics Cost Pool. This data indicates that the top five increases in *Simple RVU* total, by surgical clinic are

107 Epstein, R.M., Hundert, E.M. "Defining and Assessing Professional Competence." p. 227. Journal of the American Medical Association. January 2002.

Neurosurgery clinic (69.95 percent), Pediatric Surgery clinic (58.85 percent), Pain Management clinic (52.61 percent), Plastic Surgery clinic (26.31 percent), and Peripheral Vascular clinic (22.22 percent). When compared to simple visits, the top five as a percentage does not include ophthalmology. It is also interesting to note that while the sum of *total visits* went up by 14.4 percent for General Surgery, the sum of the *simple RVU* for General Surgery only increased by 5.32 percent. It is assumed that the higher the RVU, the more complex the visit and the more resources in personnel and material are consumed by that service. The "leading" clinics for RVUs listed here are again specialty clinics. Similar to the *total visits*, the same clinics, Otolaryngology, Ophthalmology, General Surgery, and Urology Clinics, by total *simple RVUs*, constitute the majority of outpatient care.

4. Describing the Type of Work Seen in Same Day Surgery (SDS)

In 1996, ASD (HA) established the Ambulatory Procedure Visit (APV) directive that "eliminates the requirements for admission and inpatient care for certain health care services."[108] An APV is defined as a same day procedure that "requires an unusual degree of intensity"[109] and occurs in a specially equipped and staffed unit that is designated for the purpose of caring for APVs.[110] There is some confusion between the DoD and the different military services as to the exact coding procedures for APVs, but in Navy Medicine, an APV is synonymous with Same Day Surgeries and is generally coded in a fashion so as to capture that workload.[111] For the purpose of the study and for clarity, the terminology "Same Day Surgery" will be used to mean APVs.

To further look at the actual number of Same Day Surgery (SDS) cases, the MEPRS data set was analyzed by looking at the fourth level of the code. Any fourth level MEPRS code that ends with the numeral "5" is reported as a SDS case.[112] The SADR

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[108] Assistant Secretary of Defense for Health Affairs. DoD Instruction 6025.8*: Ambulatory Procedure Visit (APV).* September 1996.

[109] Ibid.

[110] Ibid.

[111] Phone conversation with Ms. Jennifer Ike, NH Lemoore MEPRS Coordinator. February 2003.

[112] Phone and email conversation with Ms. Shannon McConnell-Lamptey at NMIMC, January 2003; Assistant Secretary of Defense for Health Affairs. DoD Instruction 6025.8*: Ambulatory Procedure Visit (APV).* September 1996.

data was manipulated to identify only those codes that end with a 5. This newly created data set produced the results indicated in the table below.

Table 12. Sum of Raw Visits by 4th Level MEPRS Codes for Surgical Care and Same Day Surgery 1999-2002

4th Level MEPRS Code	Same Day Surgery Clinic	1999	2000	2001	2002	% Change, 1999-2002
BBA5	**General Surgery Clinic**	9,856	9,309	9,628	12,425	26.1%
BBC5	**Neurosurgery Clinic**	576	507	195	270	-53.1%
BBD5	**Ophthalmology Clinic**	3,568	2,710	3,318	4,224	18.4%
BBF5	**Otolaryngology Clinic**	8,529	7,915	7,383	8,858	3.9%
BBG5	**Plastic Surgery Clinic**	1,047	915	807	1,099	5.0%
BBH5	**Proctology Clinic**	217	440	1186	1125	418.4%
BBI5	**Urology Clinic**	2,813	2,926	2,738	3,305	17.5%
BBJ5	**Pediatric Surgery Clinic**	176	188	198	521	196.0%
BBK5	**Peripheral Vascular Surg Clinic**			236	296	
BBL5	**Pain Management Clinic**			36	180	
	Grand Total	26,782	24,910	25,725	32,303	20.61%

Source: SADR

This table shows that the bulk of SDSs under the Surgical Care Sub-account BB, come from four primary surgical services, General Surgery, Otolaryngology, Ophthalmology, and Urology. In fact, on average, these four clinics, Navy wide account for 90 percent of the total same day surgery visits within the second level MEPRS code BB for Surgical Care.

It is interesting to see where the largest percentage increases have occurred in the SDS arena for Surgical Care. The Proctology clinic (418 percent) and Pediatric Surgery clinic (196 percent) have seen the largest increase in workload when compared to the other clinics. It is also interesting to note the change in SDS visits for General Surgery. This indicates that there has been a 26 percent increase in SDS visits between 1999 and 2002. This means that more than 2,500 SDSs were performed in 2002 as compared to 1999. This is a substantial increase and clearly shows the change in treatment strategies

afforded by new surgical and pharmacological technologies and the business decision to treat patients as an outpatient rather than an inpatient. As this is a raw measure, the Simple RVU measures were applied to these same Surgical Clinics for SDS. The table below highlights these results.

Table 13. Sum of Simple RVU by 4th Level MEPRS Codes for Surgical Care Same Day Surgery 1999-2002

4th Level MEPRS Code	Description of Surgical Clinic	1999	2000	2001	2002	Percent Change, 1999-2002
BBA5	**General Surgery Clinic**	55,402	50,954	51,301	64,427	16.29%
BBC5	**Neurosurgery Clinic**	5,601	6,430	1,689	2,933	-47.64%
BBD5	**Ophthalmology Clinic**	33,511	26,042	24,310	26,599	-20.62%
BBF5	**Otolaryngology Clinic**	51,929	49,068	45,439	45,272	-12.82%
BBG5	**Plastic Surgery Clinic**	11,584	10,653	7,699	9,848	-14.98%
BBH5	**Proctology Clinic**	745	1,574	4,615	4,830	548.63%
BBI5	**Urology Clinic**	18,211	17,414	14,973	19,337	6.18%
BBJ5	**Pediatric Surgery Clinic**	761	900	928	2,021	165.74%
BBK5	**Peripheral Vascular Surg Clinic**			2,060	3,000	
BBL5	**Pain Management Clinic**			61	420	
	Grand Total	178,417	163,035	153,075	178,687	.16 %

Source: SADR

A comparison analysis between Tables 12 and 13 demonstrates the merit of using a weighted workload scale. Total visits in SDS for the Surgery Clinic increased by 26 percent between 1999 and 2002. Using the weighted measure of RVU, the workload only increased by 16.3 percent for that same time period. Most striking is the difference between the Ophthalmology clinics total visits and RVU totals. While this clinic saw an increase of 18.4 percent in *Raw Visits* between the observed years, it saw a 20.6 percent decrease in RVU total for the same years. Additionally, the Otolaryngology clinic and Plastic Surgery clinic saw similar contrasts. Excluding the Pediatric Surgical clinic, the General Surgery clinic saw the largest increase in workload and the majority of SDS cases for these observed years. These increases may be positive in terms of providing surgeons and staffs with relevant experiences.

In the final analysis of weighted workload for Surgical Care of SDS cases (2nd level MEPRS code BB), the overall increase is only .16 percent. Raw workload data indicates an overall percentage increase of 20.6 percent. While weighted surgical inpatient surgical care (AB) is down significantly (-17.7 percent), overall weighted outpatient surgical care (BB) is up 12.4 percent. That increase in weighted outpatient care cannot be attributed to weighted SDS care.

In comparison, the overall percentage increase for Medical Care of SDS cases (2nd level MEPRS code BA) is up by 160 percent over the same time period. This contrast between Surgical Care and Medical Care may indicate the emphasis placed on primary care. This contrast may also reflect the change from treatment of illness and injury to a focus on prevention. It may also illuminate the fact that the transition to outpatient SDS cases has not "made up for" the decreases seen in inpatient surgical care. This hints at an overall decrease in surgical exposure for Navy Medicine.

The second level MEPRS code summaries of SDS for other work centers are given in Appendix I.

5. Relationship Between Inpatient Dispositions and SDS Cases

The final set of data that will be scrutinized here will take more of an aggregate view of the outpatient arena, looking strictly at the SDS cases and the relationship between these and inpatient dispositions. All SDS codes (those MEPRS ending with "5") were isolated and put together in one data set using Excel. These SDS codes were then aggregated according to their second level code as was done earlier, but now these codes contain only SDS. This separation will allow for a consistent comparison of *Inpatient Dispositions*, seen in the previous section, to SDS by second level MEPRS codes. This process was applied to both the *Total Visits* and *RVU* measures. As the inpatient data was only measured by *dispositions, hospital days*, and *RWP*, and the outpatient data used was measured by *Total Visits* and *RVUs*, it was decided that the closest "like measure" would be to compare the *Total Dispositions* for the inpatient data and the *Total Visits* for the SDS in anticipation that the offsetting decrease in inpatient dispositions between 1999 and 2002 would see similar increases in SDS outpatient data.

The chart below shows the relationship between Inpatient Dispositions and SDS seen between 1999 and 2002 by comparing the differences between the two measures, the ratio of Outpatient SDS to Inpatient Dispositions and the percentage change between the two.

Table 14. Relationship Between Inpatient Dispositions and Outpatient SDS for 1999 - 2002

	MEDICAL CARE	1999	2000	2001	2002	% Change, 1999 - 2002
Inpatient Dispositions	Medical Care (AA)	15,264	16,174	16,616	17,197	0.127
SDS	Medical Care (BA)	5038	6131	6467	8317	0.651
	Difference	10,226	10,043	10,149	8,880	-0.132
	Ratio SDS/In	0.330	0.379	0.389	0.484	0.465
	SURGICAL CARE					
Inpatient Dispositions	Surgical Care (AB)	15,400	15,338	14,380	13,467	-0.126
SDS	Surgical Care (BB)	26,862	24,912	25,725	32,304	0.203
	Difference	-11,462	-9,574	-11,345	-18,837	0.643
	Ratio SDS/In	1.744	1.624	1.789	2.399	0.375
	OB/GYN					
Inpatient Dispositions	OB/GYN (AC)	20,808	22,399	21,817	22,503	0.081
SDS	OB/GYN (BC)	5,587	6,154	5,800	5,423	-0.029
	Difference	15,221	16,245	16,017	17,080	0.122
	Ratio SDS/In	0.269	0.275	0.266	0.241	-0.102
	PEDIATRIC CARE					
Inpatient Dispositions	Pediatrics (AD)	20,928	21,981	21,284	22,180	0.060
SDS	Pediatrics (BD)	239	191	157	227	-0.050
	Difference	20,689	21,790	21,127	21,953	0.061
	Ratio SDS/In	0.011	0.009	0.007	0.010	-0.104
	FAMILY PRACTICE					
Inpatient Dispositions	Family Practice (AG)	10,077	10,653	11,210	11,463	0.138
SDS	Family Practice (BG)	214	96	23	141	-0.341
	Difference	9,863	10,557	11,187	11,322	0.148
	Ratio SDS/In	0.021	0.009	0.002	0.012	-0.421
	ORTHOPEDICS					
Inpatient Dispositions	Orthopedic Care (AE)	5,241	5,063	4,736	4,042	-0.229

	MEDICAL CARE	1999	2000	2001	2002	% Change, 1999 - 2002
SDS	Orthopedic Care (BE)	11,130	11,618	11,106	11,688	0.050
	Difference	-5,889	-6,555	-6,370	-7,646	0.298
	Ratio SDS/In	2.124	2.295	2.345	2.892	0.362

Source: SIDR and SADR Data Sets

Figure 15 below shows more clearly what the information in the table above contains in a side-by-side comparison of the various work centers.

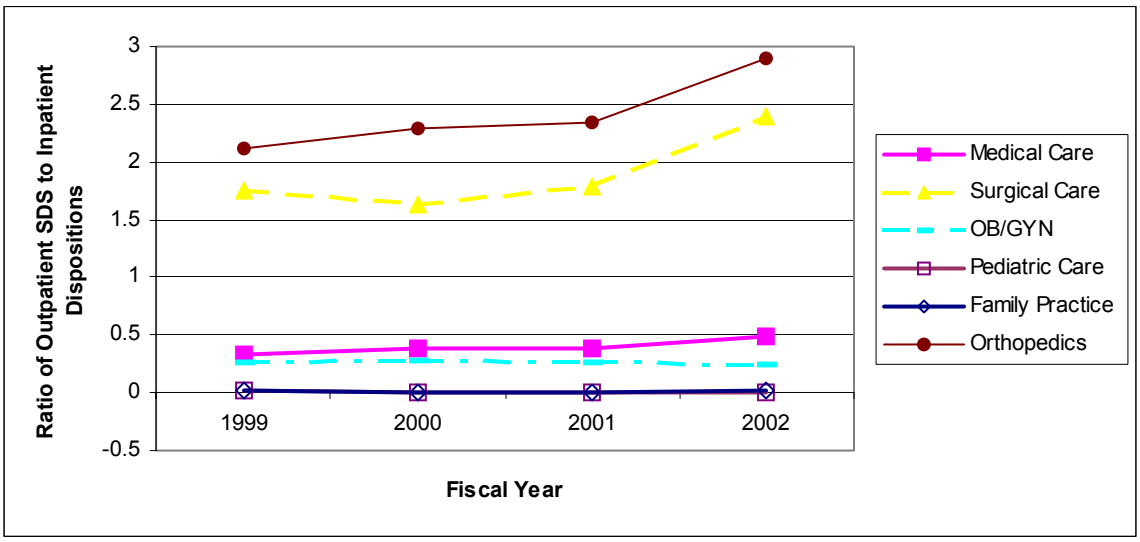

Figure 15. Ratio of Outpatient SDS to Inpatient Dispositions from 1999-2002

This figure shows the number of Outpatient SDS per Inpatient Disposition and is indicative of the relative proportion of patients that are seen in SDS versus hospitalization. The orthopedics department (BE) treated a majority of its surgical cases on an outpatient (SDS) basis, on average, with almost 2.5 SDS visits for every one disposition. Similarly, the overall surgical care work center (BB) has two SDS visits for every one hospitalization. These work center workload metrics are significantly higher, on average than the other medical work centers. The Pediatric work center plot is difficult to see on the above graph because it is behind the Family Practice trend line.

This data demonstrates that when compared to other medical work centers, Surgical care and Orthopedic care have fewer hospital dispositions in relationship to the number of SDS seen over the same time period.

E. CONCLUSION

This chapter has taken a quick glance at the topic of military readiness and medical readiness. Medical readiness can be viewed through many differing lenses, depending on the position of leadership and job held. Medical readiness or the ability "to provide combat health support" was recently described by the ASD (HA) as the "heart and soul of our Military Health System." [113] Combat health support is one of the primary reasons for military medicine's existence. Navy Medicine views the "readiness mission" as an integral part of their organizational makeup. Measurements or metrics of medical readiness are difficult to capture and many times only serve as indirect indicators of readiness. Historically, Navy Medicine views medical readiness by looking at questions such as "Do we have the right people, with the right training, right equipment, going to the right place" and ensuring that they are in alignment to meet the requirements.

This chapter takes a different perspective from the historical view taken by Navy Medicine. It has been long known that the Navy has "excess capacity" in terms of personnel and infrastructure when we are not at war. This excess capacity is utilized on a daily basis in the CONUS MTFs for treating beneficiaries, maintaining clinical skills, education and training. Medical personnel are utilized in this capacity until called upon to fulfill readiness or wartime requirements or missions other than war. With the increasing costs of health care, it becomes more and more important that the excess capacity be used efficiently and is relevant to supporting the readiness mission.

This chapter takes a macro perspective, evaluating the amount and type of medical care being provided in all Navy Medicine MTFs and attempts to assess how this care is relevant to supporting the wartime mission. The premise here was that the amount and type of inpatient care seen in our MTFs are important and should represent the type

[113] Winkenwerder, William. *ASD Letter on Readiness* dated 26 NOV 02. [https://bumed.med.navy.mil/ASD%20Letter%20on%20Readiness.doc]. Accessed November 2002.

of care that would need to be provided during wartime. Another premise is that it is critical for providers to maintain those skills and remain competent through adequate patient volume and caseload. It has been shown "that hands-on clinical exposure at military hospitals is essentially non-existent and inadequate for maintaining current clinical competence in trauma surgery."[114] It is possible that this is not only true for surgeons, but for the entire Navy health care team.

The relevance of the workload that is being performed by Navy health care providers in the MTF's and its relationship to development and maintenance of wartime workload are debatable. This research has shown that the number of inpatient admissions has decreased in Navy Medicine by over 50 percent between 1992 and 2001, with a corresponding decrease in outpatient visits by almost 23 percent.

Data for the period between 1999 and 2002 suggests that across Navy Medicine MTFs, weighted workload measures for inpatient care have decreased by 3.9 percent. Additionally, this chapter has shown during this same time period, there has been an overall decrease in surgical and orthopedic inpatient care when using both weighted (-17.7 percent surgical and –19.4 percent orthopedics) and un-weighted measures (ranging from – 12.3 percent to –22.8 percent). These findings are promising from a fiscal standpoint. But do they aid the readiness of the organization? That question remains unanswered.

While inpatient workload has decreased slightly between 1999 and 2002, the overall Navy Medicine weighted outpatient workload has increased by 26.7 percent for the same years. Of interest to this research is that weighted surgical outpatient care has increased by 12.4 percent. But there has been essentially no increase (.16 percent) in weighted outpatient same day surgery workload. Using these inpatient and outpatient workload statistics, we can infer that there has been an overall decrease in the amount of surgical care provided by Navy Medicine. If using un-weighted measures (Raw visits), the overall surgical outpatient care (including SDS volume) between 1999 and 2002 increased by almost 22 percent. SDS raw visits alone increased by 20 percent during this same time frame.

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[114] Knuth, Thomas E. "The Peacetime Trauma Experience of U.S. Army Surgeons: Another Call for Collaborative Training 1 Civilian Trauma Centers". p. 141. Military Medicine. March 1996.

From this information, it appears that that while total raw visits for SDS went up by 20 percent, the weighted workload associated with this increase hardly changed (.16 percent). It may be difficult to reconcile these differences, but one possible answer to this contrast is that the relative complexity and resource consumption per patient have declined over the same period.

The concern here is that this apparent decrease in inpatient surgical workload for Navy Medicine may point to excess capacity that is not preparing individuals for their readiness mission. Fewer inpatient surgical cases may hinder the development and enhancement of skills needed to care for wartime casualties for the entire organization. Obviously this is debatable and it may be that the decrease in inpatient surgical workload has no bearing on the organization's ability to care for seriously injured patients. If this is the case, then the information provided in this chapter highlights the decreasing surgical inpatient workload and the changes in the organizational model to one that is focused on outpatient care. However, if this is not the case, then this decreasing trend of inpatient surgical workload should be monitored and followed closely to ensure that there is not a degradation of knowledge, skills and abilities required to meet the readiness mission.

According to the Chairman of the Joint Chiefs of Staff, Joint Vision 2020 presents a strategic context in which military commanders "must have an overwhelming array of capabilities available to conduct offensive and defensive operations."[115] In addition to other military operations and contingencies this "will require a rapid, flexible response to achieve national objectives in the required timeframe."[116] Using the framework of *operational readiness* as discussed in section B of this chapter, there may be less and less time for Navy Medicine to "pull up its socks" before the medical support organization is needed to reach peak capability to support those in combat. The imperative of having a peacetime model in which the workload directly supports or resembles the type of workload likely to be seen in wartime becomes increasingly central to medical readiness.

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[115] Chairman, Joint Chiefs of Staff. Director for Strategic Plans and Policy, J5: Strategy Division. *Joint Vision 2020.* p. 12. June 2000.

[116] Ibid.

III. NAVY MEDICAL MANPOWER AND PERSONNEL TRENDS

A. OVERVIEW

Over the last decade various governmental, military and institutional studies have examined the MHS and its manpower and personnel structure. These studies were prompted by budgetary and legislative pressures to reduce the total size of the military establishment as part of the peace dividend expected at the close of the cold war. The MHS was particularly scrutinized because the overall DoD active duty end strengths were expected to decline by twice the rate of medical forces from fiscal year 1987 to FY 1999.[117]

A critical element for any successful organization is its ability to clearly articulate and define its missions and then properly size itself to meet the needs of those missions. This is an extremely challenging aspect of organizational planning but is fundamental to the achievement of the military's mission. This organizational planning occurs in the military under the rubric of Manpower and Personnel planning and is the central focus for this chapter.

Important to any analysis of the manpower arena of the military is the development of a broad understanding of the "drivers" for the requirements determination process. It is the requirements determination process that provides a foundation for the quantity and quality (type) of force structure that is in existence. This chapter will cursorily examine the requirements determination process for Navy Medicine, describe the methodology of this process and then perform a trend analysis of Medical Corps and Nurse Corps personnel end strength over the last decade.

B. HISTORICAL PERSPECTIVE FOR NAVY MEDICINE MANPOWER

The end of the cold war signified many changes for military strategists and the way they viewed the new world and the role of the U.S. military in that world. One key conclusion was that the size of the forces would need be smaller than was needed during

117 General Accounting Office Report to Congressional Committees. *Wartime Medical Care: Personnel Requirements Still Not Resolved.* p. 2. June 1996.

the cold war. But the question was "how much smaller"? Ultimately, the overall military force was reduced in size by about 37 percent from 1987 - 2000. Similarly, the Navy was reduced in size by approximately 36 percent during this same time period.[118] Table 15 below shows how the DoD average strength numbers have changed over the last decade.

Table 15. Average Military Strength in Thousands by Service from 1987-2000

FISCAL YEAR	TOTAL	ARMY	NAVY	MARINE CORPS	AIR FORCE
1987	2,168	777	583	199	609
1988	2,I38	769	581	197	591
1989	2,121	766	584	196	575
1990	2,079	750	583	196	550
1991	2,033	734	575	198	526
1992	1,898	663	551	190	494
1993	1,743	590	520	181	452
1994	1,654	560	485	175	434
1995	1,562	528	449	174	411
1996	1,490	497	426	173	394
1997	1,439	492	396	174	377
1998	1,412	483	385	172	372
1999	1,377	473	370	172	362
2000	1,373	475	370	172	356
% Change from 1987 - 2000	- 36.67	- 38.89	- 36.54	-13.57	- 41.54

Source: Selected Manpower Statistics[119]

With the drawdown underway, in 1991 Congress asked DoD to reassess its medical personnel requirements. "Specifically, section 733 of the National Defense Authorization Act for Fiscal Years 1992 and 1993 required, among other things, that DoD determine the size and composition of the military medical system needed to

[118] Washington Headquarters Services Directorate for Information Operations and Reports, *Selected Manpower Statistics.* [http://web1.whs.osd.mil/mmid/m01/fy00/m01fy00.pdf]. Accessed January 2003.

[119] Ibid.

support U.S. forces during a war or other conflict and identify ways of improving the cost-effectiveness of medical care delivered during peacetime."[120] The Office of the Secretary of Defense, Program Analysis and Evaluation, conducted this study, known as the "733 study". The results caused quite a stir in the military medical establishment.

This study, released in 1994, estimated that the MHS would only need approximately 50 percent of the current number of physicians by fiscal year 1999 to treat casualties based on the Defense Planning Guidance (DPG) of fighting two nearly simultaneously Major Theater Wars (MTWs).[121] The military services disagreed with the physician estimate found in the 733 study, stating that the methodology used did not account for the training requirements, overseas hospital requirements and a rotation base to sustain these functions. The services made different assumptions about the personnel needed for medical readiness than the 733 study and estimated medical personnel requirements to be much higher. The military medical establishment projected only a 16 percent decrease in total active duty medical personnel and only a 4 percent decrease in active duty physicians.[122]

As a result of this difference between the two estimates, the Deputy Secretary of Defense directed that an update to the 733 study be conducted to mesh the differences and improve the model used by DoD to project manpower requirements. This later study, published in 1999, became known as the "733 Update" study.[123] This study agreed with the military services that there needed to be a larger physician force structure than the original study specified. The 733 Update concluded that "72 percent of active duty physician strength was required to meet military missions and peacetime and training needs."[124] The 733 Update also indicated that results of this estimate were highly

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120 General Accounting Office Report to Congressional Committees. *Wartime Medical Care: Personnel Requirements Still Not Resolved.* p. 2. June 1996.

121 Ibid.

122 Ibid. p. 4.

123 Ibid. p. 3.

124 Cecchine, G., Johnson, D., Bondanella J., et al. *Army Medical Strategy: Issues for the Future.* p. 11. Rand Corporation. 2001.

sensitive because of the assumptions that were used. These sizing estimates could vary greatly depending on the set of assumptions used for the analysis.[125]

1. Total Health Care Support Readiness Requirement Model

In response to the original 733 study, the Navy developed a model called the Total Health Care Support Readiness Requirement (THCSRR) model "to correct what it considered inaccuracies in the 733 study."[126] This model is still used today in assisting Navy Medicine manpower planners and programmers in establishing the medical readiness manpower requirement.

As outlined in Chapter I, the Navy Medical Department has two primary missions, the readiness mission and the benefit mission. The readiness mission can be further subdivided into what is called the *wartime mission* and the *day-to-day operational support mission*. Figure 16 below illustrates the decomposition of the readiness mission.

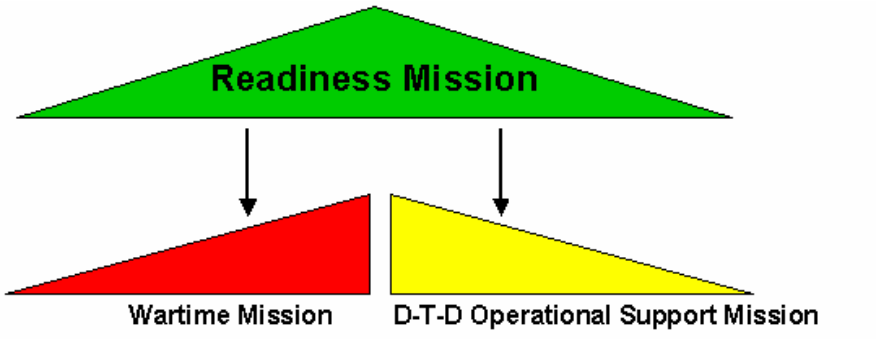

Figure 16. Readiness Mission Components

One of the central themes of the second Quadrennial Defense Review Report "was to shift the basis of defense planning from a 'threat-based' model that has dominated thinking in the past to a 'capabilities-based' model for the future."[127] This new model "serves as a bridge from today's force, developed around the threat-based, two-MTW [Major Theater War] construct, to a future, transformed force."[128]

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[125] Ibid. p. 12.

[126] General Accounting Office Report to Congressional Committees. *Wartime Medical Care: Personnel Requirements Still Not Resolved.* p. 3. June 1996.

[127] Office of the Secretary of Defense. *Quadrennial Defense Review Report*. p. iv. September 2001.

[128] Ibid. p. 18.

Currently the wartime mission of Navy Medicine entails the ability to care for medical casualties as a result of a scenario based on two MTWs and includes "mobilizing two hospital ships, supporting the fleet and the Marine Corps' operations ashore and afloat, numerous fleet hospitals, and maintaining OCONUS MTFs and dental treatment facilities (DTFs)."[129] The THCSRR model does not include the peacetime benefit mission as a variable and thus does not specifically address peacetime manpower requirements. This is done through a separate process called the Shore Manpower Determination Process (SMDP), explained in the next section.

The Day-to-Day Operational support mission for Navy Medicine is comprised of the daily medical care that is provided to active duty Navy personnel assigned to naval vessels, the FMF, and OCONUS MTFs/DTFs. In keeping with larger Navy manpower policies, there is a sea-shore rotation and overseas rotation that must occur to "relieve" those Navy medical personnel assigned to those duties. The day-to-day operational support mission includes the number of requirements necessary to adequately support this rotation back to the CONUS.[130]

When we consider the manpower requirements for Navy Medicine, it is important to consider how many uniformed people are needed. The medical establishment in the Navy is somewhat unique when compared to the Unrestricted Line communities (Aviators, Surface Warfare Officer, Submariners) in that there are civilian counterparts who can perform exactly the same job as those in uniform. There are civilian doctors, nurses, dentists, hospital administrators, etc. who perform exactly the same duties as uniformed Navy Medicine personnel.

The second question that must be asked when considering Navy Medicine manpower requirements concerns the elements of the jobs that Navy Medicine performs that make them military specific. These elements include the possibility of providing medical care in a combat zone, on deployed naval vessels, military aircraft, in overseas hospitals, and in remote locations in the continental U.S. If there is nothing military-

129 Weber, Timothy H. "The THCSRR Model – Determining Navy Medicine's Readiness Manpower Requirements." p. 19. Navy Medicine. September – October 1994.

130 Ibid.

specific about the requirement, then studies have shown that contracting these healthcare functions to outside healthcare agencies is a cost effective way to do business.

a. Wartime Mission Requirements Determination

The wartime mission of Navy Medicine entails the ability to care for medical casualties as a result of a scenario based on two MTWs. From a macro perspective, this scenario is derived from the planning of the National Command Authority and the National Security Strategy. The September 2001 Quadrennial Defense Review also provides the construct for the National Military Strategy (NMS). The NMS articulates the risks and vulnerabilities of the U.S. and identifies the various forces and military options needed by the U.S. government to combat and defend against these risks. The NMS provides inputs into the Joint Strategic Capabilities Plan (JSCP) that ultimately provides the direction and assignments for war planning. The Combatant Commanders then advance the JSCP into Operational Plans (OPLANS).[131]

There are various tools and models that the planners and programmers use to determine workload, but the basic assumptions are similar. Using OPLANS and illustrative planning scenarios, suppositions are made regarding the population at risk in these scenarios, the number and type of casualties (both wounded in action and disease, non-battle injuries), lengths of stay in theater (evacuation policies) and the level of care to be received at various echelons of care. These variables, among others, are eventually used to determine the number of wartime bed requirements (theater workload or TW), as well as the number of surgical and medical doctors and operating room requirements needed to care for these casualties.[132] It is from these wartime bed requirements that Navy Medicine answers the call to meet the hospital bed requirements in the form of Medical Platforms, i.e., Hospital Ships (T-AHs), Fleet Hospitals (FHs), and OCONUS MTFs.

The office in the Navy Medical Department responsible for staffing the Navy's portion of the TW is N931. N931 depends upon subject matter experts (SMEs) to assist in determining the appropriate quantity and quality of medical staff to support these

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[131] Rattleman, C., Levy, R., Carey N., Tsui, F. *Wartime Medical Requirements: Profiles and Requirement Determination Processes.* p. 4. Center for Naval Analysis. October 2001.

[132] Ibid. p. 8.

platforms. Through SMEs, platform advisors and the use of the Required Operating Capability/Projected Operational Environment (ROC/POE) documents for these platforms, and various other considerations, the staffing package for those TW platforms is determined. The staffing for the OCONUS augmentation is based on the staffing for a FH. [133]

b. Day-To-Day Operational Requirement Determination

Specific medical manpower requirements for the fleet are derived through a different process predicated on Condition III readiness of a particular ship's ROC/POE. This requirement varies depending on the class of ship. Condition III, called "wartime steaming," is the condition that drives the daily manpower requirements for the fleet. This condition determines the medical manpower needed by the fleet to meet both the wartime requirement and the day-to-day operational missions. An interesting part of this requirement determination process is that most of the enlisted manpower requirement for the fleet is based on workload measures, while the officer requirement is based on "command authority, special skills/knowledge, and watch-stations."[134]

N931 uses other processes to provide medical staff augmentation for the casualty treatment and receiving ships (CRTS) and the Marine Corps. The CRTS augmentation package is based upon the recommendations of SMEs similar to the TW requirements. The Marine Corps medical manpower requirements are not based on workload but rather on the mission and tasks of the organization.

Once the wartime and day-to-day operational medical manpower requirements have been determined, the first component of the THCSRR model is derived. The union of these two pieces, wartime and day-to-day operational pieces, forms what is called the Medical Operational Support Requirement (MOSR). These are essentially two different databases that are joined to form a third database that defines "the minimum number of fully trained active duty personnel required to accomplish both missions."[135] Figure 17 shows the union of these two requirements. CNA recently

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[133] Ibid. p. 16.

[134] Tsui, F., Kimble, T. *Operational Medical Manpower: Profiles and Requirement Determination Processes*. p. 20. Center for Naval Analysis. February 2001.

[135] Weber, Timothy H., "The THCSRR Model – Determining Navy Medicine's Readiness Manpower Requirements," p. 21. Navy Medicine. September – October 1994.

estimated that the total wartime requirement represents nearly 19,000 medical billets (not including OCONUS MTFs, isolated CONUS, BUMED, and others).[136]

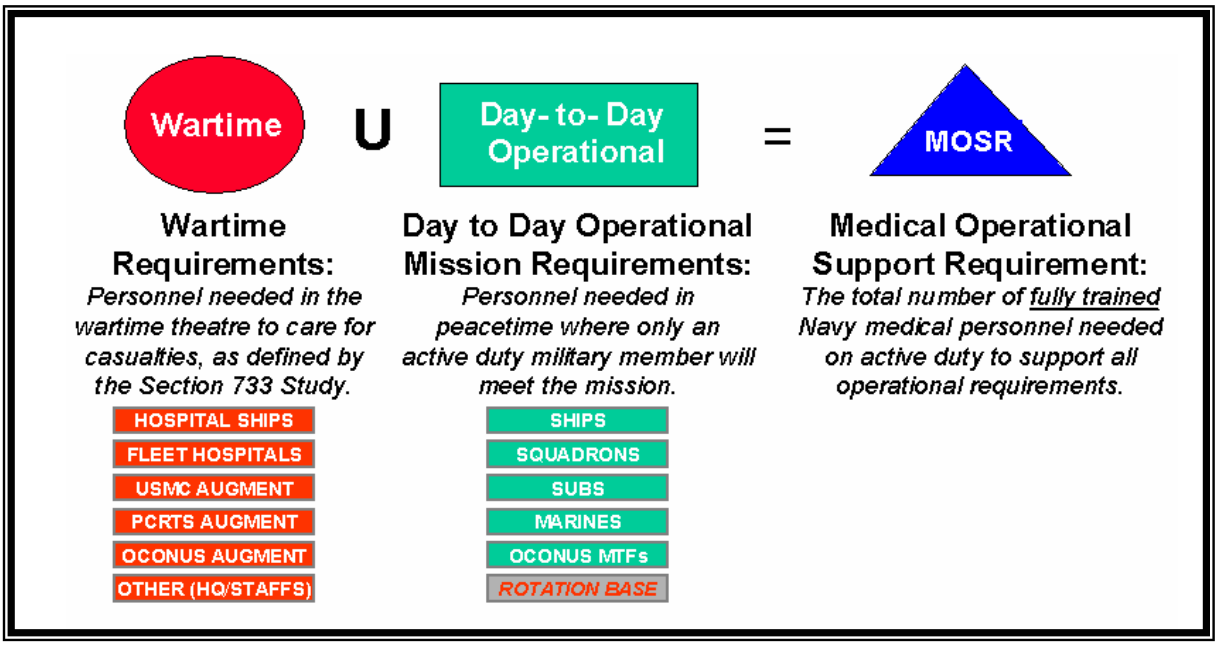

Figure 17. Medical Operational Support Requirement (MOSR)
Source: MPN 101: Medical Manpower and THCSRR Processes Briefing[137]

Once the MOSR has been completed, the second component of THCSRR, known as sustainment requirements, can be calculated. The "sustainment requirements allow for a continuous flow of qualified personnel into MOSR specified jobs as people attrite either from the Navy or from their current skill level and move to a higher skill level. The sustainment requirement, therefore, is the calculated number of billets required for officers and enlisted in training and must be *added* to the MOSR."[138] By adding both MOSR and the sustainment piece together, as seen in Figure 18 below, we

136 Rattleman, C., Levy, R., Carey N., Tsui, F. *Wartime Medical Requirements: Profiles and Requirement Determination Processes.* p. 33. Center for Naval Analysis. October 2001.

137 Franco, R., "MPN 101: Medical Manpower and THCSRR Processes Briefing". [http://www.changearchitect.com/manpower/PlenaryPresentations/THCSRRReadiness.ppt]. Accessed December 2002.

138 Weber, Timothy H. "The THCSRR Model – Determining Navy Medicine's Readiness Manpower Requirements," p. 22. Navy Medicine. September – October 1994.

arrive at the minimum total number of active duty personnel, by skill mix, needed for Navy Medicine.[139]

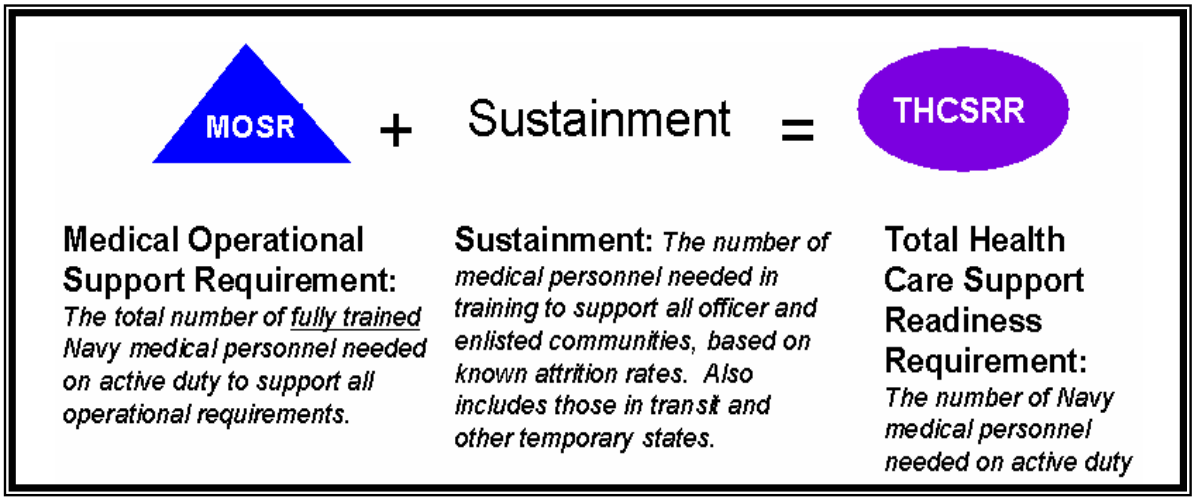

Figure 18. Total HealthCare Readiness Requirements Model
Source: MPN 101: Medical Manpower and THCSRR Processes Briefing[140]

The total manpower requirement for Navy Medicine consists of military, civilian, contractors, and even volunteers. The THCSRR only speaks to the military subset needed for readiness. The next section briefly describes the development of Navy Medicine's peacetime manpower requirements.

2. Peacetime Manpower Requirements

For wartime and day-to-day missions, the number of uniformed medical personnel required by the Navy to meet those missions is defined. It is because of these two missions and the "excess capacity" during peacetime that the health benefit mission is accomplished.[141] The active duty men and women in the MTFs in CONUS provide a

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[139] The above description of THCSRR is simplified in that it does not account for additional requirements known as the "Core requirements" which are those billets that include Commanding Officers, Executive Officers, Command Master Chiefs, among others, that are essential to the running of Navy Medicine and those they support in training capacities. There is also a Reserve THCSRR model not described in this research. For a complete overview of THCSRR, see: Copenhaver, Kimberly A. *Navy Health Care Readiness Requirement Model and Programming Costs.* Masters Thesis. Naval Postgraduate School. Monterey, California. December 1994.

[140] Franco, R., "MPN 101: Medical Manpower and THCSRR Processes Briefing". [http://www.changearchitect.com/manpower/PlenaryPresentations/THCSRRReadiness.ppt]. Accessed December 2002.

[141] Weber, Timothy H. "The THCSRR Model – Determining Navy Medicine's Readiness Manpower Requirements." p. 19 Navy Medicine. September – October 1994.

portion of this healthcare. This section will provide an overview of the peacetime manpower requirements determination process in Navy Medicine.

The manpower requirements determination process for Navy Medicine is similar to the process used by other shore commands throughout the Navy. This process, formerly called the Efficiency Review Process, is now known as the Shore Manpower Requirements Determination (SMRD) Program. This congressionally mandated program is a "dynamic process that provides a systematic means of determining and documenting minimum manpower necessary to accomplish an approved activity tasking" in the form of a Mission, Function, and Task (MFT) Statement.[142] This process "reviews and assesses workload in terms of the activity's missions, functions and tasks; objectively reviews and determines the equipment, processes, and skills necessary for the activity to efficiently and effectively discharge those missions, functions and tasks; determines the number and defines the mix of military, civilian, and contractor manpower required; and implements a resulting plan to improve the activity's ability to accomplish its mission."[143] Ultimately, a shore organization's requirements are delineated in the Statement of Manpower Requirements (SMR). The SMR discloses the "activities approved quantitative and qualitative peacetime manpower requirements."[144] The end result of the SMRD process is that there is a credible baseline which will be reflected on the Activity Manning Document (AMD) and will serve as a template for future studies for MFTs, workload indicators, and manpower requirements.[145]

The manpower requirements determination process is currently performed by the Bureau of Medicine's Requirements Determination (REDE) team, officially, M1R (formerly MED 15). The REDE team receives its guidance, policy and direction from the M1 shop, which is located at the Bureau of Medicine and Surgery in Washington, D.C. The Health Care Support Office is the administrative location for the REDE Team and

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[142] Chief of Naval Operations. *Manual of Total Force Manpower Policies and Procedures.* OPNAVINST 1000.16J. p. 3-1. January 1998.

[143] Glossary of MPT Terms. [http://web.nps.navy.mil/~kishore/mpt/glossary.htm]. Accessed December 2002.

[144] Ibid. p. B-17..

[145] Manpower Conference Briefing. *BUMED Manpower Requirements Determination Team.* [http://www.changearchitect.com/manpower/WorkshopPresentations/SMRDIICOMBINED.ppt]. Accessed December 2002.

provides the administrative oversight and support for all of Claimancy 18 (All Navy Medicine MTFs and DTFs). Figure 19 illustrates this relationship.

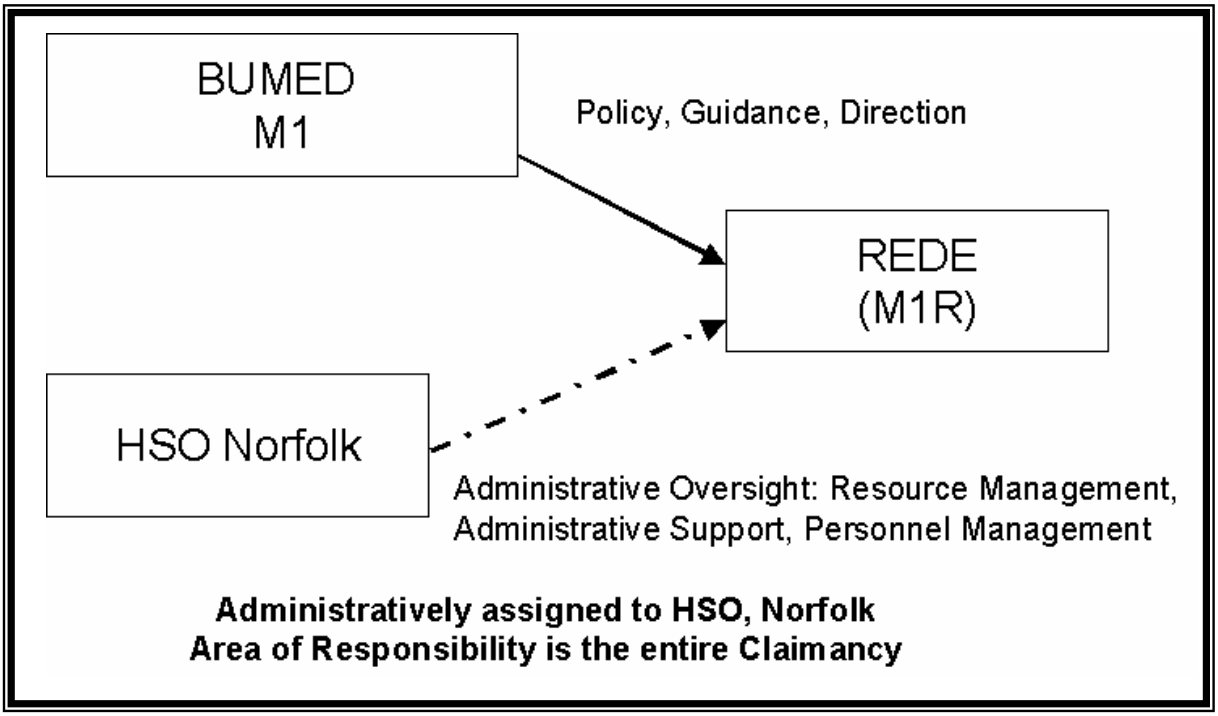

Figure 19. REDE Team Administrative and Operational Reporting Roles[146]

The purpose of the REDE team is to provide MTFs and DTFs and other Claimancy 18 activities with technical guidance and assistance in the manpower requirements determination process. REDE also provides validation of activity manpower requirements and assists in the development and maintenance of staffing standards for all health care services and support for Navy Medicine.[147]

There are various tools and techniques used to determine the amount of work performed in an activity/command. Work-studies include a *Method Study*, which is a systematic recording or critical examination of existing and proposed ways of performing the work required. This method of study is always looking at developing a more effective

[146]Manpower Conference Briefing. *Meet REDE M1R*. [http://www.changearchitect.com/manpower/WorkshopPresentations/MeetREDE1.ppt]. Accessed December 2002.

[147] Ibid.

and economical way to accomplish the work. *Method Studies* include such techniques as organizational analysis, flow process charts and space layout analysis among others. Another work-study tool is *Work Measurement*, which is "the application of techniques which establish the time for a qualified worker to perform a specific job at a defined level of performance."[148] Various *Work Measurement* techniques used by persons involved with determining workload amounts include work sampling, operational audits, and staffing standards.

It is necessary to keep in context that we are talking about health care providers where adequate staffing ratios or manpower requirements are critical to maintaining public trust, patient safety and health. There are also internal (Surgeon General) and external organizations, such as the Joint Commission on Accreditation of Hospital Organizations (JCAHO), National Committee for Quality Assurance (NCQA), and other organizations involved in ensuring that Navy MTFs meet acceptable staffing standards.

Historically, Navy medicine has used the Joint Health Care Manpower Standard (JHMS) publication, JHMS DoD 6025.12 STD, as a guideline for the calculation of medical manpower requirements. [149] Because these standards are out of date, the M1 shop at BUMED is looking to bring on-line a commercially available tool called the "Requirements Tool Box" to assist in determining total manpower requirements based on workload and staffing standards.[150]

Once these peacetime manpower requirements have been determined, they must be funded. In October of 1991, the Deputy Secretary of Defense orchestrated the beginning of a unified medical program for all medical activities within the DoD. This action formed the basis for resources to the military health establishment to fall under the direction of the Assistant Secretary of Defense for Health Affairs (ASD(HA)).

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[148] Manpower Conference Briefing. *BUMED Manpower Requirements Determination Team.* [http://www.changearchitect.com/manpower/WorkshopPresentations/SMRDIICOMBINED.ppt]. Accessed December 2002.

[149] Sarmiento, Jeanne. *Pediatric Outpatient Clinic Manpower Requirement Variables at Navy Medical Treatment Facilities.* p.23. Masters Thesis. Naval Postgraduate School. Monterey, California. June 2000.

[150] Franco, Richard. Email to author dated January 27, 2003.

Eventually, all services consolidated their medical budgets and programming functions into a unified Defense Health Program (DHP).[151]

It is through the DHP that Navy Medicine is able to buy or authorize the funding of billets to meet the manpower requirements. Of the total Navy medical billets purchased, almost 75 percent are directed requirements from Claimancy 18 and are funded with DHP dollars. The other 25 percent of medical billets authorized are managed and paid for by various other Marine, fleet, and staff claimants. The figure below shows the Navy Medical Department by claimant.

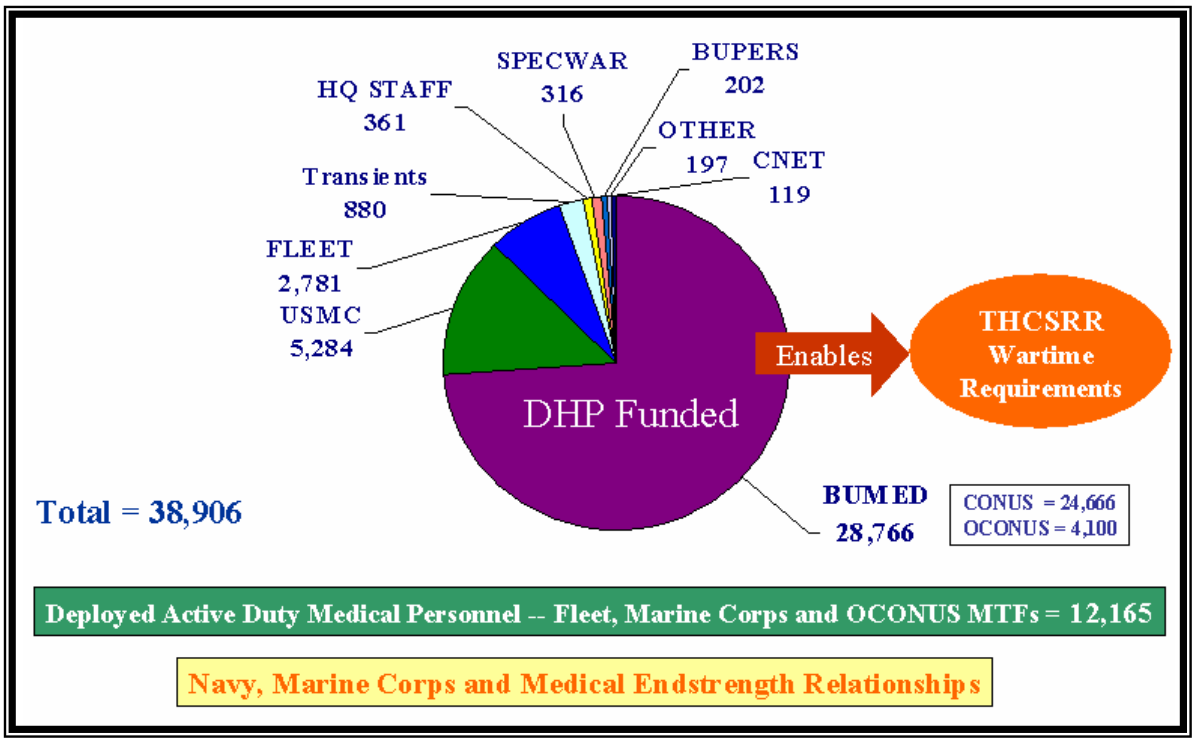

Figure 20. Navy Medical Department Billets by Claimant[152]

As Figure 20 suggests, the peacetime manpower requirements determination process establishes a base for THCSRR allocation. A key aspect of THCSRR implementation is the recent ability of Navy Medicine to link wartime requirements to

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[151] Copenhaver, Kimberly. *Navy Health Care Readiness Requirement Model and Programming Costs*. p. 16. Masters Thesis. Naval Postgraduate School. Monterey, California. December 1994.

[152] Franco, Rich. "MPN 101: Medical Manpower and THCSRR Processes Briefing." [http://www.changearchitect.com/manpower/PlenaryPresentations/THCSRRReadiness.ppt]. Accessed December 2002.

peacetime billets. This is done through the Component Unit Identification Code (UIC) concept.

3. Component Unit Identification Concept

All Navy commands are identified by the Navy Comptroller through a five digit numeric code called the UIC. The command or activity with a UIC is considered a parent command. A Component UIC identifies an activity subordinate to a parent command. "Readiness" or mobilization platforms such as Fleet Hospitals or Hospital Ships have Component UICs associated with a parent UIC. Peacetime billet authorizations are used to meet the mobilization requirement, i.e., they are matched to mobilization platform requirements. This Component UIC is linked to an MTF (or parent command) to meet the platform requirements. Navy Medical Personnel are now ordered to their Component UIC, e.g., Naval Hospital Bremerton, Fleet Hospital Bremerton Detachment.

This distribution process for Navy Medical Department personnel is centralized through the Bureau of Naval Personnel (BUPERS) and allows personnel to know their mobilization billet at the point of receiving orders. This is beneficial for several reasons. The first is that the parent command no longer controls the assignments of the individual to the mobilization platforms. Historically, this has been problematic because individuals at a command have been assigned to multiple platforms during one full-length tour. This causes inefficiencies with training resources and decreases the readiness status of the platform to which they were assigned.

For example, an individual would report to Naval Hospital "X". In addition to assignment to the hospital, this same person would be assigned to a mobilization platform, say, Fleet Hospital "Y". With this mobilization platform assignment comes specific types of training unique to the FH. Then for various reasons, that individual would be reassigned by the parent command to another mobilization platform to meet a vacancy, e.g., a Hospital Ship. All the training that the individual has received on the FH may be valuable to the individual in terms of exposure, but the organization has lost valuable time and training resources. In addition, the Hospital Ship is at a disadvantage because the newly assigned individual has not had any ship training and must backtrack

to ensure that individual meets required training standards. This lack of training adversely impacts the readiness status of the ship.

With the Component UIC concept, the parent command is out of the loop in this decision making process. The assignment now occurs at BUPERS. An individual is ordered to the mobilization platform to meet a specific readiness requirement, but reports to the hospital for their day-to-day duty. In this way, the individual, the local command and the larger organization knows which readiness requirements are being met. In addition, this stabilizes training requirements and platform readiness criteria. By assigning persons to the readiness platform, it also places a focus on the readiness aspect of the medical jobs. In essence, the person would be assigned to the mobilization platform, but report to the Commanding Officer of the parent command and be assigned a job at the command based upon the peacetime requirements determined through the SMRD process. Ideally, this also provides a better skill match between what the person is doing at the parent command (peacetime requirements) and their mobilization assignment (readiness requirements). For example, a nurse who is assigned to the mobilization platform of a Hospital Ship as a critical care nurse will be assigned to the intensive care ward at the parent MTF.

Because there are differences in the readiness/mobilization requirements and the peacetime billets, there are a number of mismatches that occur between these two. This next section will begin to look at readiness requirements, billets and bodies to further examine this issue.

A recent Center for Naval Analysis (CNA) study determined that in general, Navy Medicine's billets and bodies can meet the wartime requirements (as defined by CNA, wartime requirements do not consider OCONUS MTFs, Commanding Officers, training billets, etc).[153] But as noted above, there are some mobilization requirement and peacetime billet mismatches. This mismatch was evaluated through a series of conferences of subject matter experts and the Bureau of Medicine Corps Chiefs. A list of THCSRR Allocation polices and rules at the skill/subspecialty level was approved to

[153] Rattleman, C., Levy, R., Carey N., Tsui, F. *Wartime Medical Requirements: Profiles and Requirement Determination Processes.* p. 51. Center for Naval Analysis. October 2001.

cover these mismatches. In the Nurse Corps, some of these substitution rules are platform specific, whereas for the Medical Corps, the substitution rules are not platform specific.

For example, if the Fleet Hospital requirement calls for a critical care nurse with a primary subspecialty (SUBSP1) of 1960, it is possible to substitute with a Medical Surgical Nurse (SUBSP1 1910); however, it is not possible to substitute more than 40 percent of the 1960 requirements with 1910 bodies. Likewise, if the requirement for OCONUS MTF is a nurse with SUBSP1 1945 (ER/Trauma), the 1960 (critical care nurse) may substitute for 100 percent of the 1945 requirements. A Medical Corps example is if the requirement calls for 16P0 (Emergency Medicine doctor), then a 16R0 (Internist) may substitute for 20 percent of the 16P0 requirements, but a 16Q0 (Family Medicine doctor) may substitute for 33 percent of the Emergency Medicine doctor. A listing of these substitution rules for Medical Corps and Nurse Corps as of FY 1999 can be found in Appendix D.

C. TREND ANALYSIS OF MEDICAL CORPS AND NURSE CORPS END STRENGTH

The following data is presented as a historical trending of Medical Corps and Nurse Corps end strength from 1990 – 2002 by primary subspecialties. The author requested data from the Bureau of Medicine and Surgery (BUMED) that contains a list of the total number of all Navy Medicine personnel by designator and primary subspecialty from 1990 – 2002. BUMED was able to provide data that included all medical department officers and incorporates operational UICs (ships, Marines, squadrons, etc.) that were in inventory or in Navy Medicine at the end of the fiscal year. This is considered "faces" data because it represented the actual number of persons in Navy Medicine rather than the "spaces" data which represents the peacetime requirements as determined by the SMRD program. This data was received in 13 separate spreadsheet files (one file for each fiscal year) without any personal identifying information (no names or social security numbers). Each file contains over 10,000 lines of data including the UIC, billet sequence code, pay grade, designator, primary and secondary subspecialties, and additional qualification designators (AQDs). An example of this data

for FY 1993 is seen in Figure 21 below. The column headings with an "X" represent a description of the column that precedes it.

FY	UIC	XUIC	BSC	DESIG	GRADE	SUBSP1	XSUBSP1	SUBSP2	XSUBSP2	AQD1	XAQD1
1993	00168	NMEDCOM NACAPREG	12080	2905	K	1960V	CRIT CAR AN	1900E	NURSG BS		
1993	00018	BUMED WASH D.C.	64020	2200	G	1775P	PUB HLTH M				
1993	61726	NH GROTON CT	26905	2100	G	1500K	SG GEN BC				
1993	66099	NMC PT HUENEME	24680	2100	H	1626J	PM OCC FT	1605J	UMO FT	6UM	SUB MED
1993	00168	NMEDCOM NACAPREG	07205	2300	I	1802V	MEDLOGAD AN	0031V	HCA-FADM AN		

Figure 21. Example of Data File Received from BUMED

The data source for this information is the Bureau of Medicine and Surgery Information Management System (BUMIS), linked to the Total Force Manpower Management System (TFMMS). TFMMS is the single authoritative database for total force manpower requirements and active duty manpower authorizations and end strength for the Navy. BUMIS extracts medical requirements and personnel data from TFMMS and uses this information to complete its own database.

1. Methodology Used for Trend Analysis

These 13 files were combined into one master file, containing all records from 1990-2002 using the statistical analysis program SAS® 8.01 for Windows®. This newly created data set contained 150,765 observations and 20 variables Each observation represents one person in Navy Medicine, by fiscal year, identifying their assigned duty station (UIC), billet sequence code, designator (Medical Corps, Dental Corps, Nurse Corps, Medical Service Corps), rank or pay grade, including their primary and secondary subspecialties along with any AQDs that the individual may possess. This information was used to begin the process of sorting and analyzing this Navy Medicine end strength data.

From a macro view of Navy Medicine, the officer corps end strength has decreased from a high in 1992 of 12,216 personnel to 11,242 in 2002. This represents a

decrease of 7.79 percent. Between 1990 and 2000 the cut in strength for Navy Medicine Officer Corps was 5.4 percent when end strength for the entire Navy organization was cut by 36.5 percent. This difference in end strength for Navy Medicine and the overall organization represents the degree to which Navy Medicine was able to justify its size using the THCSRR model.

Because the focus of this study is dealing with clinical workload and staffing, the author determined to limit the focus to only the Medical Corps (those observations with a designator of 2100 or 2105) and Nurse Corps (those observations with a designator of 2900 or 2905). The Medical Service Corps (MSC) is a diverse corps that has three primary classifications of jobs: (1) health care administrators, (2) health care scientists (environmental health officers, epidemiologist, and biochemists among others) and (3) clinicians (physician assistants, physical therapists, psychologists, etc). While there are a number of Medical Service Corps officers who are clinical providers, they were purposefully excluded from this analysis, as their THCSRR requirements are significantly smaller when compared to the Medical Corps and Nurse Corps requirements.

The first procedure performed was to determine the end strength of Medical Corps and Nurse Corps officers for each year from 1990-2002. This would allow for trending measures to show any major changes in overall numbers for this time period. While doing this procedure, it was discovered that there had been a change to the Medical Corps Subspecialty codes between 1993 and 1994. It was necessary to re-map the old subspecialty codes to the new ones in order to make a consistent comparison across years. Using BUMED INSTRUCTION 1214.1, all Medical Corps subspecialty codes prior to 1993 were mapped to the new subspecialty codes found in the *Manual of Navy Officer Manpower and Personnel Classifications,* NAVPERS 15839I.

For example, in 1993, a fully trained Obstetrician/Gynecologist (OB/GYN) would possess a primary subspecialty (SUBSP1) of 1510J, where J represents “fully trained”. In 1994, the same doctor had a SUBSP1 of 15E0. In 1993, a OB/GYN with a board certification specialty in Gynecologic Oncology would have a SUBSP1 of 1562K, where the K represents “board certification”. This same OB/GYN in 1994 would have a

SUBSP1 coded as 15E1 with an AQD of 6EG. Notice with the year 1994 and later coding scheme that the "0" at the end represents general training, where the "1" at the end represents specialty training. This generally holds true for all the subspecialty codes.

Because of the complex nature of these SUBSP1 codes and the numerous variations that these codes can take, the author decided to look at the end strength numbers of the Medical Corps by title name. Using the example found above, any OB/GYN doctor with general training, board certification, and/or any SUBSP1 (such as OB/GYN obstetrics critical care medicine, gynecologic oncology, maternal fetal medicine, reproductive endocrinology, etc.) was designated as an "OB/GYN" with a "15E" code. These were aggregated together to give one listing for all OB/GYN doctors, no matter what level of training or specialty. Doing this reduced the possible permutations and combinations of SUBSP1 and AQDs from over 200 to 25 general categories or a General Category Code. A complete listing of the mapping scheme and aggregation used for this research is found in Appendix E.

For the Nurse Corps, the process of organizing the data was more straightforward. Using BUMED INSTRUCTION 1214.1 CHANGE TRANSMITTAL 1 as a reference, all Nurse Corps observations were classified under the numeric codes listed in this document. The suffixes for these codes for the various SUBSP1 were not evaluated in this analysis. For example, a medical/surgical nurse has a SUBSP1 of 1910. Suffixes for this SUBSP1 include "1910K" for Certified in Medical/Surgical nursing, "1910P" for a nurse who possesses a Master's level of education, or an "1910S" for a nurse who has significant experience in Medical/Surgical nursing. Eliminating these suffixes left only 35 general categories for the Navy Nurse Corps. These general categories can found in Appendix F.

a. End Strength for Medical Corps from 1990 – 2002.

End Strength (E/S) is defined in the OPNAVINST 1000.16J as "the number of officer…requirements which can be authorized (funded) based on approved budgets."[154] Essentially it is the number of uniformed personnel set by Congress allowed to be on active duty September 31st of each year. Officer Community Managers are

[154] Chief of Naval Operations. *Manual of Total Force Manpower Policies and Procedures.* p. B-5. OPNAVINST 1000.16J. January 1998.

responsible for managing the professional development and career growth of officers in their communities. They develop strength plans, accession plans, and promotion plans on a regular basis to ensure that their community is at the proper E/S by the end of the FY. In total, inventory of personnel must be within 1.5 percent above or ½ percent below congressionally mandated E/S levels.

When analyzing E/S numbers, it is significant to note that these numbers may not be representative of the entire year. Unlike other Navy communities, Navy Medicine's lowest strength numbers occur between March and April. Most gains or accessions into Navy Medicine occur between May and August. This influx of new personnel coincides with the new graduates who are coming out of schools and universities. The point here is that the E/S numbers represent a snapshot in time and the actual strength numbers are likely to be lower throughout the rest of the year.

The Table 16 below shows Navy Medicine's E/S numbers from 1990 to 2002 for the entire Officer Corps, Medical Corps, and Nurse Corps. Four different time periods are listed at the bottom of the table for comparison analysis. These four different time periods are the same ones used in other sections of this research.

Table 16. End Strength Numbers for Navy Medicine Officer Corps, Medical Corps, and Nurse Corps for FY 1990 - 2002

FISCAL YEAR	OFFICER CORPS	MEDICAL CORPS	NURSE CORPS
1990	11,834	4,166	3,058
1991	12,096	4,332	3,132
1992	12,216	4,325	3,301
1993	12,204	4,336	3,331
1994	11,870	4,258	3,219
1995	11,718	4,170	3,313
1996	11,473	4,101	3,266
1997	11,274	4,018	3,283
1998	11,186	4,028	3,189
1999	11,205	4,073	3,143
2000	11,199	4,051	3,120
2001	11,248	4,091	3,147

FISCAL YEAR	OFFICER CORPS	MEDICAL CORPS	NURSE CORPS
2002	11,242	4,097	3,156
% Change in E/S from 1990 - 2002	- 5.00	-1.66	+3.20
% Change in E/S from 1990 - 2000	-5.36	-2.76	-2.03
% Change in E/S from 1992 - 2000	-8.34	-6.34	-5.48
% Change in E/S from 1999 - 2002	+.30	+.59	+.41

Source: BUMIS

The table above reveals only small decreases in E/S as compared to the larger changes made in overall DoD E/S and Navy E/S (as seen in Table 15) for similar time periods. The reason for this small change in size is because of the readiness requirements determined by THCSRR. THCSRR is able to justify the minimum number of medical personnel needed in uniform to support the readiness requirements.

The next step was to look at the Medical Corps by general categories to see if there were any emerging trends in the end strength by the general categories as mapped out in Table 17 below and found in Appendix E.

Table 17. Mapping and Aggregation of Old SSP1 Codes to New Codes and General Category Code for Medical Corps

TITLE	DESCRIPTION	NEW SSP1	TITLE	AQD	OLD SSP1	General Category Code
Flight Surgeon	Aviation Medicine	15A0			1602	**15A0**
Preventive Medicine Officer Aerospace	Aerospace Medicine	15A1			1624	**15A1**
Anesthesiologist	Anesthesia, General	15B0			1540	**15B**
	Anesthesia, Subspecialty	15B1			1541	
General Surgeon	Surgery, General	15C0			1500	**15C**
	Surgery, Subspecialty	15C1				
	Thoracic & CDV Surgeon		Surgery Subspecialty Cardio thoracic Surgery	6CD	1507	
	C/Rectal Surgeon		Surgery Colon & Rectal Surgery	6CE	1501	
	Pediatric Surgeon		Surgery Pediatric Surgery	6CH	1506	
	Peripheral Vascular Surgeon		Surgery Peripheral Vascular Surgery	6CI	1503	

TITLE	DESCRIPTION	NEW SSP1	TITLE	AQD	OLD SSP1	General Category Code
	Plastic Surgeon		Surgery Plastic Surgery	6CJ	1520	
	Surgical Oncology		Surgery Oncology	6CL	1560	
	Trauma		Surgery Trauma Surgeon	6CM	1561	
Neurosurgeon	Neurological Surgery, General	15D0			1515	
	Neurological Surgery, Subspecialty	15D1				
	Complex Spinal Neurosurgery				1570	**15D**
	Skull based Neuro Surgery		Neurological Surgery Complex Spinal Neuro-Surg	6DD	1514	
Obstetrician/Gynecologist	Obstetrics/Gynecology General	15E0			1510	
	Obstetrics/Gynecology Subspecialty	15E1				
	Gynecologic Oncology				1562	**15E**
	Maternal Fetal Medicine		OB/GYN Gynecologic Oncology	6EG	1551	
	Reproductive Endocrinology		OB/GYN Maternal Fetal Medicine	6EH	1512	
General Medical Officer	General Medicine	15F0			1600	**15F**
Ophthalmologist	Ophthalmology, General	15G0			1524	**15G**
	Ophthalmology, Subspecialty	15G1				
	Comprehensive Ophthalmologist				1580	
	Corneal and External Eye Dz		Ophthalmology Subspecialty Comprehensive	6GD	1526	
	Glaucoma		Ophthalmology Subspecialty Cornea & External Disease	6GE	1530	
	Surgical Neuro-Ophthalmolgy		Ophthalmology Subspecialty Glaucoma	6GF	1578	
	Oculoplastics		Ophthalmology Subspecialty Neuro-Opthalmology/Surgery	6GG	1529	
	Ophthalmologic Pathology		Ophthalmology Subspecialty Oculoplastics	6GH	1585	

TITLE	DESCRIPTION	NEW SSP1	TITLE	AQD	OLD SSP1	General Category Code
	Retinal Surgery		Ophthalmology Subspecialty Ophthalmic Pathology Subspecialty Surgery	6GI	1527	
Orthopedic Surgeon	Orthopedic Surgery, General	15H0			1516	
	Orthopedic Surgery, Subspecialty	15H1				
	Trauma Surgery				1545	
	Hand Surgery		Orthopedic Surgery Subspecialty Faculty Development	62D	1517	
	Foot and Ankle Surgery		Orthopedic Surgery Subspecialty Hand Surgery	62F	1550	
	Musculoskeletal Oncology		Orthopedic Surgery Subspecialty Foot & Ankle Surgery	6HD	1559	**15H**
	Pediatrics Orthopedics		Orthopedic Surgery Subspecialty Orthopedic Oncology	6HF	1519	
	Spine Surgery		Orthopedic Surgery Subspecialty Pediatric Orthopedic Surgery	6HG	1518	
	Sports Medicine / Surgical		Orthopedic Surgery Subspecialty Spine Surgery	6HH	1535	
	Total Joint		Orthopedic Surgery Subspecialty Sports Surgery	6HI	1513	
Otolaryngologist	Otolaryngology, General	15I0			1522	
	Otolaryngology, Subspecialty	15I1	Otolaryngology Subspecialty Faculty Development	26D		
	Facial Plastic and Reconstructive Surgery				1521	**15I**
	Head and Neck Surgery		Otolaryngology Subspecialty Facial Plastics & Reconstructive	6ID	1590	
Urologist	Urology, General	15J0			1508	
	Urology, Subspecialty	15J1				
	Urology Fellowship				1563	**15J**
	Pediatric Urology		Urologic Subspecialty Pediatric Urology	6JG	1509	
Preventive Medicine Officer Preventive Health	Preventive Medicine, General	15K0			1628	**15K**

TITLE	DESCRIPTION	NEW SSP1	TITLE	AQD	OLD SSP1	General Category Code
Preventive Medicine Officer Occupational	Occupational Medicine, General	15K2			1626	
Physical Medicine and Rehabilitation	Physical Medical and Rehabilitation, General	15L0				**15L**
	Physical Medical and Rehabilitation, Subspecialty	15L1				
	Physical Medicine and Rehab.				1634	
Pathologist	Pathology General	15M0			1680	**15M**
	Pathology Subspecialty	15M1				
	Ophthalmic Pathology				1690	
	Anatomic Pathology		Pathology Subspecialty Anatomic Pathologist	6MB	1682	
	Clinical Pathology		Pathology Subspecialty Clinical Pathologist	6MC	1681	
	Cytopathology		Pathology Subspecialty Cytopathologist	6MF	1691	
	Dermatopathology		Pathology Subspecialty Dermatopathologist	6MG	1684	
	Forensic Pathology		Pathology Subspecialty Forensic Pathologist	6MH	1685	
	Hematopathology		Pathology Subspecialty Hemato-Pathologist	6MI	1686	
	Immunopathology		Pathology Subspecialty Immuno-Pathologist	6MJ	1688	
	Neuropathology		Pathology Subspecialty Neuro-Pathologist	6MK	1683	
Dermatologist	Dermatology, General	16N0			1618	**16N**
	Dermatology, Subspecialty	16N1			1619	
Emergency Medicine	Emergency Medicine, General	16P0			1616	**16P**
	Emergency Medicine, Subspecialty	16P1			1635	
Family Practitioner	Family Medicine General	16Q0			1610	**16Q**
	Family Medicine Subspecialty	16Q1				
	Family Practice Faculty Devel.		Family Medicine Subspecialty Adolescent Medicine Specialist	62A	1609	
	Family Practice Obstetrics		Family Medicine Subspecialty Faculty Development	62D	1640	

TITLE	DESCRIPTION	NEW SSP1	TITLE	AQD	OLD SSP1	General Category Code
Internist	Internal Medicine, General	16R0			1612	
	Internal Medicine, Subspecialty	16R1				
	Adolelescent Medicine				1644	
	Allergy/Immunology		Internal Medicine Subspecialty Adolescent Medicine Specialist	62A	1652	
	Critical Care Medicine		Internal Medicine Subspecialty Allergy/Immunologist	62B	1699	
	Imnunology		Internal Medicine Subspecialty Critical Care	62C	1653	
	Cardiology		Internal Medicine Subspecialty Allergy Immunologist Dli	6RF	1643	
	Cardiac Electrophysiology		Internal Medicine Subspecialty Cardiology General	6RG	1659	
	Interventional Cardiology		Internal Medicine Subspecialty Cardiac Electrophysiologist	6RH	1658	
	Endocrinology/Metabolism		Internal Medicine Subspecialty Interventional Cardiologist	6RI	1654	**16R**
	Gastroenterology		Internal Medicine Subspecialty Endocrinologist	6RK	1647	
	Hematology		Internal Medicine Subspecialty Gastroenterologist	6RL	1648	
	Medical Oncology		Internal Medicine Subspecialty Hematologist	6RN	1649	
	Infectious Disease		Internal Medicine Subspecialty Oncologist	6RO	1641	
	Nephrology		Internal Medicine Subspecialty Infectious Disease Specialist	6RP	1655	
	Pulmonary Disease		Internal Medicine Subspecialty Nephrology	6RQ	1642	
	Rheumatology		Internal Medicine Subspecialty Pulmonologist	6RR	1656	
	Tropical Medicine		Internal Medicine Subspecialty Rheumatologist	6RS	1645	

TITLE	DESCRIPTION	NEW SSP1	TITLE	AQD	OLD SSP1	General Category Code
Neurologist	Neurology, General	16T0			1620	**16T**
	Neurology, Subspecialty	16T1	Neurology Subspecialty Faculty Development	62D		
	Child Neurology				1621	
	Medical Neuro-Ophthalmology		Neurology Subspecialty Child Neurologist	6TD	1668	
	Neurophysiology		Neurology Subspecialty Medicine Neuro-Ophthalmologist	6TF	1669	
Undersea Medical Officer	Undersea Medicine, General	16U0			1605	**16U**
	Undersea Medicine, Subspecialty	16U1				
	Undersea Occupational Med.				1606	
	Hyperbaric Medicine		Undersea Medicine Subspecialty Undersea Occupation Medicine	6UE	1632	
Pediatrician	Pediatrics, General	16V0			1614	**16V**
	Pediatrics, Subspecialty	16V1				
	Developmental Pediatrics				1611	
	Pediatric Intensivist				1617	
	Pediatric, Gastroenterology		Pediatrics Subspecialty Pediatric Intensivist/Critical Care	6VI	1661	
	Pediatric Cardiology		Pediatrics Subspecialty Pediatric Gastroenterologist	6VL	1660	
	Neonatology		Pediatrics Subspecialty Pediatric Hematologist Oncologist	6VN	1615	
Nuclear Medicine Specialist	Nuclear Medicine	16W0			1678	**16W**
	Nuclear Radiologist				1673	
Psychiatrist	Psychiatry, General	16X0			1622	**16X**
	Psychiatry, Subspecialty	16X1				
	Child Psychiatry				1623	
	Forensic Psychiatry		Psychiatry Subspecialty Child/Adolescent Psychiatry Subspecialty	6XH	1698	
Radiologist (Diagnostic)	Diagnostic Radiology	16Y0			1670	**16Y**
	Radiology, Subspecialty	16Y1				

TITLE	DESCRIPTION	NEW SSP1	TITLE	AQD	OLD SSP1	General Category Code
	Imaging Radiology				1675	
	Neurologic Radiology		Radiology Subspecialty Imaging	6YD	1672	
	Pediatric Radiology		Radiology Subspecialty Neuro-Radiology Subspecialty	6YF	1671	
Radiologist (Therapeutic)	Radiation Oncology	16Y2				
	Theraputic Radiology				1676	
	Interventional Radiology		Radiology Subspecialty Interventional/Vascular Rad	6YE	1677	
Executive Medicine	Executive Medicine	1806			1806	**1806**

Sources: BUMEDISNT 1214.1 and Medical Corps Specialty Leader Orientation Manual For Active Duty and Reserve Specialty Leaders[155]

Only a select few general categories for Medical Corps will be examined for this research. The entire table of E/S by general category for Medical Corps can be found in Appendix G. Table 18 below highlights the end strength of doctors in all of Navy Medicine by general category from 1990-2002.

Table 18. End Strength by General Category for Medical Corps 1990-2002

General Category Codes	15C	15D	15E	15G	15H	15I	15J	16P	16Q	16R	16V
Description Year	**Gen Surg**	**NeuroSurg**	**OB/GYN**	**Optho**	**Ortho**	**Oto**	**Uro**	**ER**	**FP**	**Intern**	**PED**
1990	258	27	177	86	177	98	68	88	336	448	195
1991	263	27	174	83	201	98	70	101	350	449	191
1992	269	26	164	83	201	99	74	103	339	447	182
1993	265	26	163	79	214	102	72	115	338	437	184
1994	254	25	163	81	199	93	65	127	340	425	173
1995	251	27	159	89	167	95	61	121	369	416	229
1996	239	28	164	89	159	91	65	131	377	417	233
1997	232	21	176	86	157	94	59	138	392	407	225

[155] Medical Corps Specialty Leader Orientation Manual For Active Duty and Reserve Specialty Leaders. [http://www-nehc.med.navy.mil/SPECIAL/PrevMed/Specialty_Leader_Manual.pdf]. Accessed December 2002.

General Category Codes	15C	15D	15E	15G	15H	15I	15J	16P	16Q	16R	16V
Description Year	**Gen Surg**	**NeuroSurg**	**OB/GYN**	**Optho**	**Ortho**	**Oto**	**Uro**	**ER**	**FP**	**Intern**	**PED**
1998	222	19	180	85	153	87	56	152	426	408	217
1999	224	17	188	81	158	82	52	153	467	399	221
2000	213	19	173	78	160	78	53	170	496	378	239
2001	223	23	169	79	174	75	49	182	518	373	234
2002	239	26	172	81	181	80	51	176	529	374	245
Total	3152	311	2222	1080	2301	1172	795	1757	5277	5378	2768
% Change 1990 - 2002	-7.36%	-3.70%	-2.82%	-5.81%	2.26%	-18.37%	-25.00%	100.00%	57.44%	-16.52%	25.64%
% Change 1992 - 2001	-17.10%	-11.54%	3.05%	-4.82%	-13.43%	-24.24%	-33.78%	76.70%	52.80%	-16.55%	28.57%
% Change 1999 - 2002	6.70%	52.94%	-8.51%	0.00%	14.56%	-2.44%	-1.92%	15.03%	13.28%	-6.27%	10.86%

Source: BUMIS

An evaluation of this data from an overall perspective (FY1990 – FY2002) and a comparison to the overall Medical Corps trends (found in Table 16 above), reveal increases in the number of Medical Corps personnel in the areas of orthopedics, emergency room doctors, family practice physicians, and pediatricians. From a workload viewpoint this would appear to be consistent with the increasing focus on primary care and outpatient visits. Between 1990 and 2001, there has been a steady increase in the number of emergency room physicians. As of 2002 there were 100 percent more ER doctors in Navy Medicine when compared to 1990. The most significant overall decreases found in this data involve urologists, otolaryngologists, and internal medicine doctors, whose E/S numbers have declined by 25 percent, 18.4 percent, and 16.5 percent respectively.

From a more recent perspective (1999 – 2002), the largest percentage increases occur in neurology (53 percent), emergency room (15 percent), and orthopedics (15 percent). The only decreases in Medical Corps personnel come from obstetrics and gynecologists (8.5 percent), internal medicine doctors (6 percent), otolaryngologists (2 percent), and urologists (2 percent). With the exception of neurosurgeons, the positive

increases in manning appear reasonable when compared to the overall changes seen within Medical Corps over the same time period.

In summary, it appears that E/S numbers for the various Medical Corps have been relatively stable from year to year and appear to make no major swings. This consistency illustrates the incremental nature of community management. General Surgeons, over the entire period examined, have had a slow downward trend in total numbers, but recent years show that there is an attempt to raise these levels of E/S. The real question here is whether or not these are the right numbers. History has shown that "to date, the defense establishment has yet to reach consensus on what medical resources are required for the combination of operational missions, wartime readiness, and peacetime health care."[156] As of August 2002, community manager inputs suggest that the Medical Corps is "currently 200+ over authorized levels."[157] These numbers are highly sensitive to the character of the assumptions. There is a tremendous amount of uncertainty in medical manpower requirements and these assumptions color the stated demand for personnel.

Additionally, there are some specialties that are out of balance according to THCSRR. These aberrancies include excess numbers in some of the primary care specialties such as Emergency Medicine, Internal Medicine, Pediatrics, and General Medical Officers. There are shortfalls in some of the surgical and other specialties, including General Surgeons, Anesthesiologists, Radiologists and Gastroenterology.[158]

b. End Strength for Nurse Corps from 1990 – 2002

Next, the Nurse Corps was analyzed in a similar fashion. The combined data set was arranged so that a new data set was formed. Any Navy Medicine Officer that had a designator of 2900 or 2905 (Nurse Corps) was included in the Navy Medicine active duty E/S data set. These observations were broken out by primary subspecialty. Not all subspecialties were evaluated; however a complete listing of this information is found in Appendix H. It is important to note that SUBSP1 of 1900 is Professional

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156 Cecchine, G., Johnson, D., Bondanella J., et al. *Army Medical Strategy: Issues for the Future.* p. 12. Rand Corporation. 2001.

157 Barrow, Angie. "Medical Department Officer Community Management Brief." [https://bumed.med.navy.mil/med03/SG_Conf_2002/Plenary_Session/Community%20Management.ppt]. Accessed November 2002.

158 Ibid.

Nursing. The largest number of nurses in the Nurse Corps, on an annual basis, have this listed as their primary subspecialty. 1900 is the SUBSP1 that is given to all new nurses when they enter the Navy. After a few years of nursing experience, most nurses choose to specialize. Once they meet the requisite experience and certifications, they are eligible to apply for a change to their SUBSP1. Nurses are allowed to have three subspecialties, a primary, secondary, and tertiary. Only the primary SUBSP is evaluated here.

Table 19. End Strength Number by Primary SUBSP for Nurse Corps 1990-2002

	Prof.Nsg	Med/Surg	Perinatal	Peds	Ambulatory	ER/Trauma	OR	CriticalCare
SUBSP1	**1900**	**1910**	**1920**	**1922**	**1940**	**1945**	**1950**	**1960**
1990	1134	154	112	36	166	161	245	340
1991	1092	182	118	40	200	162	256	335
1992	1135	232	116	53	239	147	240	375
1993	1091	225	154	57	261	145	236	382
1994	985	247	175	45	262	156	248	355
1995	1192	220	158	38	255	143	255	336
1996	1209	188	149	33	261	142	255	302
1997	1312	163	132	33	235	137	257	292
1998	1305	198	138	43	72	154	249	333
1999	1231	190	138	41	68	145	243	376
2000	1147	185	140	44	68	165	240	422
2001	1167	197	146	43	67	164	235	411
2002	1152	205	150	40	69	180	268	386
% Change 1990 - 2002	1.59%	33.12%	33.93%	11.11%	-58.43%	11.80%	9.39%	13.53%
% Change 1992 - 2001	2.82%	-15.09%	25.86%	-18.87%	-71.97%	11.56%	-2.08%	9.60%
% Change 1999 - 2002	-6.42%	7.89%	8.70%	-2.44%	1.47%	24.14%	10.29%	2.66%

Source: BUMIS

Evaluating the entire time frame from 1990 to 2002 reveals some interesting trends. All categories presented for this analysis, with the exception of Ambulatory Care nursing, have experienced moderate to significant increases in E/S numbers. The largest increase in E/S by SUBSP1 occurred in Perinatal nursing (33.93 percent) and Medical/Surgical nursing (33.12 percent). Nurses who work in these clinical areas are primarily utilized as inpatient care providers. Moderate increases in E/S are also observed in Critical Care nursing, ER/Trauma, and Pediatrics, with 13.5 percent, 12

percent and 11 percent increases, respectively. The number of Professional nurses has been relatively stable over the 13 year time frame.

Of particular interest was the significant decrease in end strength for Ambulatory Care nurses between 1990 and 2002. This decrease of over 58 percent is the largest decrease of any subspecialty. At a time in which the focus of medical care has shifted from the inpatient domain to the outpatient domain, the number of nurses who carry Ambulatory Care as a primary SSP has decreased. From a macro perspective, this seems counterintuitive. The number of doctors who work in the ambulatory care setting has increased while the number of nurses who have 1940 as a SUBSP1 has decreased. It would be logical to assume that the more doctors available to perform increasing workload, the more nursing staff would be needed to provide support. Information in this analysis tends to contradict this assumption.

Additionally, the number of nurses whose practice is generally in the inpatient areas (Critical Care, Med/Surg, and Professional nurses) has experienced moderate growth. This increase is interesting given the fact that it occurs the face of a medical model that has shifted its focus away from the inpatient area. The data seems to present some contradictory themes. An August 2002 Nurse Corps Community brief alluded to this pattern. The brief points out that the number one retention tool for nurses is the opportunity for advanced education (more specialization), but the "challenge is continual utilization of this training."[159]

There has been an increase of 83 percent in end strength in Nurse Practitioners (Pediatric, Family, OB/GYN, and Midwifes) from 1990 to 2002. See Appendix H for more detail. Nurse Practitioners (NPs) are independent primary care providers who see patients in the same clinics as many of the primary care doctors. It could be that those nurses in Ambulatory Care are choosing to specialize further and obtain NP degrees. This increase in NPs may account for some of the decrease seen in Ambulatory Care nursing. Additionally, the increases seen in the NPs hint at the focus being placed on primary care settings. While overall numbers for the Nurse Corps have

[159] Barrow, Angie. "Medical Department Officer Community Management Brief." [https://bumed.med.navy.mil/med03/SG_Conf_2002/Plenary_Session/Community%20Management.ppt]. Accessed November 2002.

changed little, the distribution of nurses has shifted to a larger number having primary SSPs that are essentially "inpatient" focused. There has been an increase of 8 percent from 1990 to 2002 in nurses with a primary SSP of 1900, 1910, 1920, 1960, and 1964 (Neonatal ICU nurses). There has been an overall decrease in the number of "outpatient" nurses (those who possess primary SSPs of 1920, 1922, 1940 and 1945) of over 20 percent. If you add the NPs to this outpatient category, then the change is only – 1 percent.

Lastly, Peri-operative (Operating Room/Post Anesthesia Care) nursing has seen an overall increase of 9 percent. The individuals who serve in this area are critical to supporting the readiness mission, particularly those who serve and participate in forward deployed units. Their skills are important to maintaining a competent surgical team.

It is important to understand that from this global perspective, using these numbers alone can be misleading. There may be policy decisions, business strategies, clinical rules, coding changes or data quality issues that explain the trends observed here. It is beyond the scope of this research to determine if this is the case. This macro approach is intended to analyze the numbers as they appear and to draw conclusions. The next chapter will look more closely at the various workload measures seen in Chapter II in conjunction with this E/S information.

D. CONCLUSION

This chapter has attempted to give a synopsis of Navy Medicine's Manpower and Personnel world. The military drawdown of the early to mid 1990's did not affect the officer corps of the Navy Medical Department to the same degree as it did the rest of the Navy. The reason for this is that Navy Medical planners and programmers were able to clearly articulate the manpower requirements needed to support the wartime scenarios of two major regional conflicts through the Total Health Care Support Readiness Requirement model. This programming was founded on Defense Planning Guidance and is one of the key drivers for the THCSRR. In addition, they were able to demonstrate that it is not just wartime requirements that are needed to support the Navy. There is the day-to-day operational medical support required to meet the needs of the fleet and Marines

which includes the overseas MTFs and the number of persons necessary to sustain appropriate sea/shore rotations, overseas rotations, etc. THCSRR sets the floor or minimum number of uniformed personnel, by skill mix, in Navy Medicine to meet the readiness requirements of the organization.

In addition to readiness requirements determination, the Navy has a peacetime benefit mission that it is required by law to support. This mission occurs in our CONUS MTFs and is considered part of our direct care system. There is a separate and distinct peacetime requirements determination process that is used to determine the manpower requirements for shore based installations. This process, the Shore Manpower Determination Requirements Program, is the name given to the practice used to determine peacetime medical requirements. Traditionally, this is based on the historical workload generated at each medical facility. Although various tools and methods are used to assist with this determination, most recently, Navy Medicine is attempting to determine these manpower requirements based on a combination of workload and staffing standards.

The Component UIC was briefly described and highlighted as a bridge to link peacetime billets to wartime requirements. This linkage has assisted Navy Medicine manpower planners and detailers to better meet readiness requirements. It has also placed an emphasis on readiness requirements and allowed for a more central distribution point. This has also created training efficiencies and permitted more focused mobilization training which is beneficial for the entire organization.

Lastly, Medical Corps and Nurse Corps end strengths were briefly analyzed using a general category description for the Medical Corps and primary subspecialty for the Nurse Corps. In the aggregate, between 1990 and 2002 neither Corps has had a significant change in overall size (- 1.7 percent for Medical Corps and 3.2 percent for the Nurse Corps).

For the Medical Corps categories evaluated, it appears that there have been a few primary care specialties that have had significant increases in total size over the 13 year period evaluated (Emergency Medicine 100 percent increase, Family Practice 57 percent increase, and Pediatrics 25 percent increase). These increases may be in response to the

changing emphasis toward outpatient treatment and preventive health initiatives. During this same time period, there appears to be a slight decrease in the total number of the surgical doctors.

For the Nurse Corps, it appears that the largest increases in E/S, as a percentage, have occurred in the subspecialties of Peri-natal nursing and Medical / Surgical nursing. Both of these specialties focus their practice on patients who are in the inpatient areas of nursing care. The most significant decrease in total percentage seen for the Nurse Corps occurs in the primary subspecialty of Ambulatory Care nursing (-58 percent). The increase in E/S for nurses who have a primary sub-specialty in inpatient nursing and the decrease in nurses who have a primary subspecialty in outpatient nursing runs counter to the nature of workload trends seen over the last few years and seems to conflict with the prevalent medical model, i.e., a shift from inpatient to outpatient care.

Like reading a quote without understanding the context, the trends have been presented here to a large degree in isolation. There has been no effort to look at a larger perspective with which to frame some of these trends. The next chapter will attempt, at a minimum, to compare these end strength numbers against the workload data presented in Chapter II. It is hoped that this type of comparison will elucidate the net changes, by specialty, for Navy Medicine and get one step closer to determining whether Navy Medicine's peacetime workload supports wartime requirements.

IV. ANALYSIS OF WORKLOAD AND END STRENGTH DATA

A. OVERVIEW

Manpower requirements are a function of and intrinsically linked to workload, and cannot be determined in isolation from it. Yet in the last two chapters, we have treated these two variables separately. In Chapter II, workload was first looked at in relationship to the "pool" of available patients (catchment population). Workload was then trended by evaluating the historical amount and type of work performed at MTFs throughout Navy Medicine. In Chapter II, the focus was on who was doing the work, i.e., the medical workforce that delivered care to these patients.

In Chapter III, a cursory trend analysis was performed on the actual numbers of doctors and nurses who were available to perform the clinical work in Navy MTFs over the last few years. This analysis answered the question of who was doing the work, but the question that was left unanswered was "What work was being done?"

In this chapter these two elements, workload and staffing, will be combined on a timeline in order to form a more complete picture and trend of the clinical work performed per doctor or nurse. Ideally, there should be a direct relationship between workload and the amount of resources needed to complete the work. This chapter takes an overarching view of Navy Medicine, evaluating the work and personnel over time to see if there has been a change in the clinical work relative to the number of persons available to do the work. The context is important, as there will again be a focus on the surgical aspects of the workload. Outpatient metrics will be used as a comparison or reference indicator to inpatient metrics.

B. ASSUMPTIONS AND LIMITATIONS

The data used for this analysis has been explained in previous chapters. It is important to remember the fact that this comprehensive set of data includes workload that occurs at OCONUS MTFs. The OCONUS MTFs, in the view of the Total Health Care Support Readiness Requirement (THCSRR) model, are components of the readiness mission. Therefore, to analyze this data from all Navy MTFs, which includes the

OCONUS MTFs, is to include workload that falls under the day-to-day operational support mission. This is important because in this analysis the purpose is to demonstrate the workload performed as part of the peacetime mission and attempt to show its relevance to enhancing the skills of Navy nurses and doctors through exposure to an "appropriate" volume and case mix. By including the OCONUS workload, we are including work that is already a part of Navy Medicine's readiness mission. Additionally, the workload used for this analysis does not capture the work that occurs outside of MTFs. The "loss" of this workload is reasonable, as we are interested in the workload that MTFs provide.

Furthermore, the data set for personnel used in this analysis includes *all* of Navy Medicine's doctors and nurses in the organization. This means that the numbers used not only represent the doctors and nurses that work in MTFs, but also include those assigned to operational units such as ships, squadrons, and the Marines. It also includes those who were assigned as Commanding Officers, Executive Officers, Officers in Charge as well as other command and staff positions (jobs where typically there is no direct patient care). No attempt was made to look at only those personnel assigned just to MTFs. Historical data from Chapter III indicated that between 68 and 75 percent of all medical billets (including enlisted personnel) were MTF billets. The assumption here is that a doctor or a nurse in the end strength data set is assigned to an MTF. Because we know this is not the case, this will mean that the measurements used for these calculations will be "generous" in their results.

Additionally, another assumption made is that all nurses and doctors in the data set are involved in direct patient care. Again, we know this is not true. The implicit assumption is if a doctor or nurse has a primary subspecialty of, say, general surgery or critical care, then they are practicing as a general surgeon or a critical care nurse. We attempt to correct for some of this in the fact that the use of primary subspecialty codes will give a better indication of those who are more likely involved in direct patient care. However, it is possible to carry a clinical primary subspecialty code and not be involved in patient care.

An example will assist in illustrating these assumptions. Suppose that the workload for FY 2000 shows that there were 100 units of work performed during that year, and that end strength for that year showed that there were 10 nurses. This means that there were, on average, 10 units of work per nurse for FY 2000. This is what this analysis will measure. But because we know that there were fewer nurses assigned to MTFs (they were on ships, headquarters staff positions, etc.), it is likely that approximately 25 percent of those nurses were not assigned to MTFs, where the work was being captured. Therefore, the actual amount of work per nurse was more like 13.3 units per nurse (100 units work / 7.5 nurses). And because not all those nurses actually work in direct patient care, there were really only 5 nurses who performed the measured work. More accurately, this means that there were, on average, 20 units of work per nurse (who performed the work). Therefore our stated measurement of 10 units of work per nurse demonstrates that that this workload per nurse is generous (less work per nurse than is actually the case) and not entirely accurate. However, if this same measurement is used for all time periods and we assume that the percent of nurses who work outside of MTFs and are not directly involved in direct patient care remains constant, then we can still garner valuable trending information.

Lastly, it is important to remember that the clinical work recorded in Navy MTFs is not all provided by uniformed personnel. It is known that the demand for health care in military medicine (i.e., Navy Medicine) exceeds the capacity of uniformed personnel to deliver. Studies have shown that the "rates at which military beneficiaries used inpatient and outpatient services were on the order of 30 to 50 percent higher than those of civilians in fee-for-service plans."[160] While there may be legitimate reasons for this "over use," in the final analysis, the demand for peacetime care on the whole exceeds the ability of uniformed personnel to provide it. This means medical care is provided by other sources.

There is some workload that is captured at the MTFs that is provided through either direct government contracts (Naval Hospital "X" contracts with provider "Y" to perform "Z" service), managed care contracts or resource sharing agreements. Workload

[160] Hosek, Susan, Bennett, Bruce, et al. *The Demand for Military Health Care: Supporting Research for a Comprehensive Study of the Military Health Care System.* Rand Corporation. 1995.

that is performed in Navy MTFs is sometimes supported by uniformed personnel (Hospital Corpsmen may help civilian Dr. "Y" to get patients prepped for an exam, ensure the proper paper work is completed, etc.), and recorded as workload in the MTF. This data set contains that information. It is impossible to determine how much of this workload is "contracted out" with the data that is used for this analysis. This segregation of "uniformed work" and "contracted work" is not typically done in Navy MTFs because the cost and resources used, for example, by a contracted civilian Family Practice doctor are the same as the cost and resources used by a Navy doctor. So from a fiscal standpoint, there is no difference.

But what about clinical experience and exposure? If the contractor is seeing the bulk of patients, this "takes away" from the case volume and patient mix seen by uniformed personnel. The bottom line is that there is some portion of workload occurring at Navy MTFs that is not is performed by Navy uniformed medical personnel. The extent or degree of this phenomenon is not identified in this analysis.

C. ORGANIZATIONAL TREND ANALYSIS

The initial evaluation of this data first considers the pool of eligible patients or beneficiaries in light of the total number of doctors and nurses. This comparison provides the number of eligible beneficiaries in Navy Medicine MTFs catchment population as stated in the HCARE Report and the end strength by year for Navy Medicine doctors and nurses as identified through BUMIS.

The next comparison that is trended over time is the ratio of admissions (ADM) and outpatient visits (OPV) to the number of doctors recorded on end strength for the same years.

The Table 20 below summarizes this data for the Medical Corps.

Table 20. Ratio of Catchment Population, ADMs and OPVs to End Strength Doctors

Fiscal Year	End Strength of Docs	Catchment Population	Ratio of Catchment Pop / Doctor	Total # of ADMs	Ratio of ADM / Doctor	Total # of OPVs	Ratio of OPV / Doctor
1992	4325	1,942,420	449.11	190,789	44.11	6,595,977	1,525.08
1993	4336	1,985,621	457.94	183,870	42.41	6,697,299	1,544.58
1994	4258	1,985,621	466.33	175,255	41.16	7,311,829	1,717.20
1995	4170	1,865,951	447.47	159,888	38.34	Missing	Missing
1996	4101	1,608,875	392.31	151,347	36.90	6,943,850	1,693.21
1997	4018	1,704,790	424.29	114,578	28.52	6,823,864	1,698.32
1998	4028	Missing	Missing	Missing	Missing	Missing	Missing
1999	4073	1,529,727	375.58	89,021	21.86	5,501,744	1,350.78
2000	4051	1,529,974	377.68	95,395	23.55	5,114,154	1,262.44
2001	4091	1,559,248	381.14	93,162	22.77	5,111,078	1,249.35
2002	4097	Missing	Missing	Missing	Missing	Missing	Missing
% Change 1992 -2001	- 5.41%	-19.73%	-15.13%	-51.17%	-48.38%	-22.51%	-18.08%

Source: HCARE Report and BUMIS

This table demonstrates that on the whole, from 1992 through 2001, the number of hospital admissions per doctor has decreased by almost 50 percent. Using the set of assumptions given in the previous section, this means that each doctor in Navy Medicine, on average, is admitting approximately 22 fewer patients per year in 2001 than in 1992. This does not sound extreme. However, consider that this represents almost 100,000 fewer hospital admissions per year in 2001 when compared to 1992. While the doctor "misses out" by only 22 hospital admissions per year, the inpatient hospital nursing staff and corpsmen also "miss out" of caring for those nearly 100,000 inpatients.

Interpreting this decrease in inpatient workload per doctor is difficult. It may mean that inpatient workloads are now at more "reasonable" levels when compared to years past. It may mean that the "bubble" of workload has shifted to the outpatient side of the house by the changes made to the medical model used by Navy Medicine. It may indicate a decreasing trend that signifies a "loss of corporate knowledge" (in terms of caring for inpatients) by the organization and potentially point to a trend that may be

adverse to medical readiness. Or it may represent a combination of these hypotheses. It is difficult to interpret using numbers alone.

This table also shows that in 2001, each doctor in Navy Medicine is seeing, on average, 276 fewer outpatient patients than were seen in 1992. Is this significant? Suppose a doctor sees on average 20 patients per day. This means that each doctor saw about 14 fewer days' (276 patients / 20 patients per day) worth of patients. On the surface, this does not seem too significant; however, looking at the entire organization, this data translates to almost 1.5 million fewer OPVs per year. This seems a little more significant and suggests that this downward trend is worth investigating. Again, the reasons for this decrease may vary, but the bottom line is that while outpatient workload overall has decreased since 1992 by almost 23 percent, end strength of doctors has decreased by only about 5.5 percent.

This same data is presented on the next page using the Nurse Corps's end strength as the basis for the ratios determined. This data shows changes similar to those seen above for physicians, which is not surprising since we are using the same information for the numerator in our calculations. This data indicates that, on average, between 1992 and 2001, each nurse in the Nurse Corps is caring for almost half of the number of patients they cared for a decade before.

Table 21. Ratio of Catchment Population, ADMs and OPVs to End Strength Nurses

Fiscal Year	End Strength of Nurses	Catchment Population	Ratio of Catchment Pop / Nurse	Total # of ADMs	Ratio of ADM / Nurse	Total # of OPVs	Ratio of OPV / Nurse
1992	3301	1,942,420	588.43	190,789	57.80	6,595,977	1,998.18
1993	3331	1,985,621	596.10	183,870	55.20	6,697,299	2,010.60
1994	3219	1,985,621	616.84	175,255	54.44	7,311,829	2,271.46
1995	3313	1,865,951	563.22	159,888	48.26	Missing	
1996	3266	1,608,875	492.61	151,347	46.34	6,943,850	2,126.10
1997	3283	1,704,790	519.28	114,578	34.90	6,823,864	2,078.55
1998	3189	Missing	Missing	Missing	Missing	Missing	
1999	3143	1,529,727	486.71	89,021	28.32	5,501,744	1,750.48
2000	3122	1,529,974	490.06	95,395	30.56	5,114,154	1,638.10
2001	3147	1,559,248	495.47	93,162	29.60	5,111,078	1,624.11
2002	3156	Missing	Missing	Missing	Missing	Missing	Missing
% Change 1992 -2001	-4.67%	-19.73%	-15.80%	-51.17%	-48.78%	-22.51%	-18.72%

Source: HCARE Report and BUMIS

Is this a deleterious to medical readiness? Again, a number of factors need to be considered. Given the set of assumptions as outlined in section B above, it could be that that standard of care in 1991 was not what it was in 2001. It is possible that the staffing standards were such that there were different nurse to patient ratios in previous years. Recent studies have shown the benefit to improved patient outcomes when more hours of inpatient hospital care are provided by registered nurses. This means the more time nurses spend with patients, the shorter the average length of stay, the lower the complication rate, and the lower the risk of death during hospitalization.[161] While Table 21 indicates that there are fewer inpatients per nurse, this may mean that better care is provided and patient outcomes are improving.

Another possible variation in examining this apparent workload trend may be that in years past, more nurses were involved in direct patient care. It is possible that in more recent years there were fewer nurses involved in patient care and so the decrease in inpatient admissions has not changed the amount of patient exposure for nurses who are

[161] Needleman, Jack, Buerhaus, Peter, et al. *Nurse-Staffing Levels and the Quality of Care in Hospitals.* New England Journal of Medicine. May 2002.

actually at the point of patient care. But this would also indicate there are fewer nurses who are involved in direct patient.

The number of outpatients per nurse during this same time period has decreased by almost 19 percent. Given the limitations of this study, fewer outpatient visits per nurse means less overall patient care per nurse. Adding to the complexity of this analysis is the question of whether outpatient visits "add value" to the ability of the nurse to meet readiness requirements of a mobilization platform. While it is not within the scope of this research to investigate this question, this information does show, that on average, there are fewer outpatient visits per nurse in 2001 than there were in 1992, with only a 4.5 percent decrease in Nurse Corps end strength over this same period.

D. INPATIENT TREND ANALYSIS BY PHYSICIAN SPECIALTY

The next step in this analysis was to drill down further to see if it was possible to infer or derive more information about the surgical workload that has occurred in Navy Medicine. This analysis uses the second level MEPRS code or summary account of AB. AB indicates the work center that is credited with work is Inpatient Surgical Care. This summary account includes inpatient care and consultative evaluation in the surgical specialties and subspecialties of general surgery (ABA), cardiovascular and thoracic surgery (ABB), neurosurgery (ABD), ophthalmology (ABE), oral surgery (ABF), otolaryngology (ABG), pediatric surgery (ABH), plastic surgery (ABI), proctology (ABJ), urology (ABK), organ transplant (ABL), burn unit (ABM) and peripheral vascular surgery (ABN).[162] The workload measured in this evaluation was compared to the number of surgeons available in Navy Medicine to perform the work. The assumption here is that a general surgeon is responsible for work assigned to the general surgery work center (ABA), the neurosurgeon performs work associated with the neurosurgery work center (ABD), the Emergency Medicine doctor performs the work associated with Emergency Room work center (BI), etc. This appears to be a reasonable assumption.

[162] Assistant Secretary of Defense for Health Affairs. DoD 6010.13-M: *Medical Expense and Performance Reporting System for Fixed Military Medical and Dental Treatment Facilities.* November 2001.

The decision was made to use the Relative Weighted Product (RWP) as the measure of workload in this analysis. This weighted measure is useful because it identifies resource consumption and reflects patient complexity and the patient's length of stay. The total RWP workload (from the summary account AB) was used for each year from 1999 to 2002. Because oral surgery is performed by a dentist with a specialty of oral surgery, the workload from the ABF work center (oral surgery) was subtracted from the total amount of workload (AB) to derive a RWP final value for each year. Appendix C can be used as a reference for the workload values obtained in this analysis.

The next step was to use the mapping of general category codes for Medical Corps subspecialties as outlined in Appendix E. The end strength (E/S) for each year for the general category codes of 15C (general surgeons), 15D (neurosurgeons), 15G (ophthalmologists), 15I (otolaryngologists), and 15J (urologists) were added together to determine the total number of surgeons available to perform the workload as identified above.

Table 22. Ratio of Inpatient Weighted Surgical Workload per Aggregate Surgeons

	Total RWP Workload for Summary Account "Inpatient Surgical Care" (AB) minus oral surgery workload. See Appendix C.	**E/S of General Category Codes for Surgeons 15C+15D+15G+15I+15J. See Appendix E.**	
	RWP Workload Measure	**Total Number of Surgeons**	**Ratio of RWP/Surgeon**
1999	21353.53	614	34.78
2000	20294.32	601	33.77
2001	18917.25	623	30.36
2002	17261.00	658	26.23
Overall Percent Change 1999 - 2002			- 24.58%

Source: SIDR and BUMIS

Graphically, the ratios found in Table 21 are represented below.

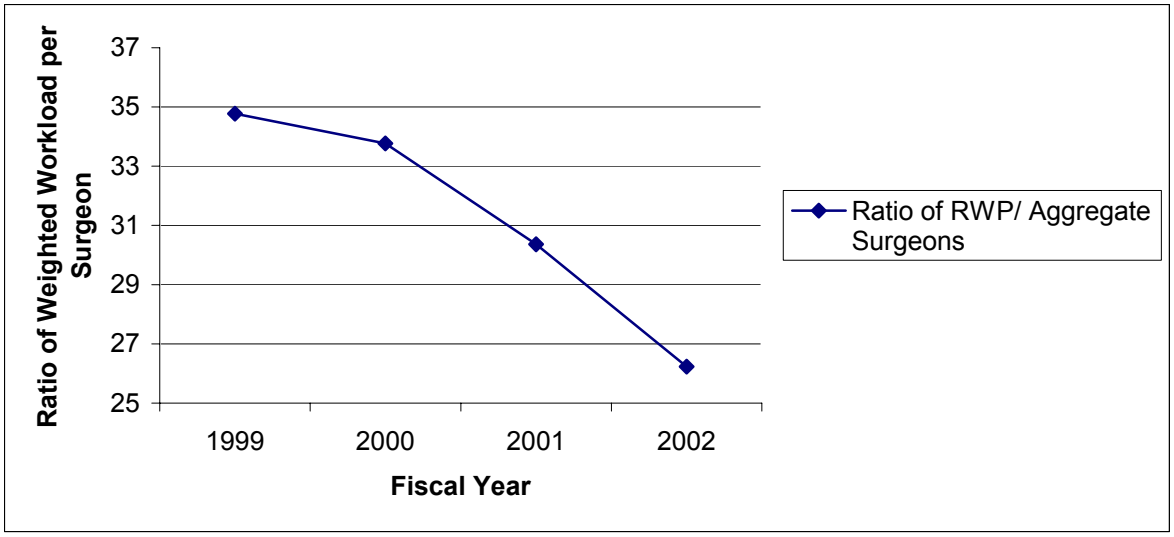


Figure 22. Ratio of Weighted Workload per Aggregate Group of Surgeons by Fiscal Year

This information illustrates a downward trend in the amount of inpatient surgical workload per surgeon between 1999 and 2002. There is almost a 25 percent decrease in the amount of work per surgeon. Given the set of assumptions in section B, this information may merit further analysis beyond the bounds of this research. In many ways, the reduction in inpatient surgical care provided by the physicians may have a ripple effect throughout the organization. If patients are not being admitted to the hospitals, then those who provide the nursing care and ancillary services are "missing out" on the exposure to and experience of caring for these patients as well. As the numbers of patients decrease, the organization and infrastructure that is set up to care for these individuals "miss out" on the opportunity to care for and "handle" these patients. Corporate knowledge in terms of patient care could be lost to inexperience. In the words of Dr. Howard Champion, former professor of Military and Emergency Medicine and a senior advisor in trauma at the Uniformed Services University of Health Sciences, "combat trauma care danger signals" include a fading institutional memory and limited experience with injury.[163] This decline in inpatient exposure may present a danger signal to the organization.

[163] Champion, Howard R. "Epidemiology of Combat Death: Historical Perspective Briefing." [http://www.cs.amedd.army.mil/acfi/C6/C6/drchampion_files/frame.htm]. Accessed December 2002.

To take this particular analysis one step further, this research looks at the third level MEPRS codes for the general category code of "general surgeon" (15C found in Appendix E) across the same time period. This snapshot of data takes the workload of the work centers General Surgery (ABA), Cardiovascular and Thoracic Surgery (ABB), Pediatric Surgery (ABH), Plastic Surgery (ABI), Proctology (ABJ) and Peripheral Vascular Surgery (ABN) and totals the RWP workload for each year. This view further isolates the workload to that of the group of individuals who fall under the category of general surgeon (15C). The table below draws upon the information found in Appendixes C and E.

Table 23. Ratio of Weighted Inpatient Surgical Workload to Surgeon (15C)

	RWP Workload for Work centers ABA, ABB, ABH, ABI, ABJ, and ABN (See Appendix C)	**E/S of General Category Codes for Surgeon 15C (See Appendix E)**	**Ratio of Workload to E/S of Surgeon**
1999	15,851.31	224	70.76
2000	15,767.57	213	74.03
2001	14,756.38	223	66.17
2002	13,869.57	239	58.03
Overall Percent Change 1999 - 2002			- 17.99%

Source: SIDR and BUMIS

This more focused analysis of the workload in work centers most likely to be performed by general surgeons, cardio thoracic surgeons, pediatric surgeons, peripheral vascular surgeons, plastic surgeons and colon/rectal surgeons shows a decrease of inpatient workload of 18 percent. This is illustrated by the graph below.

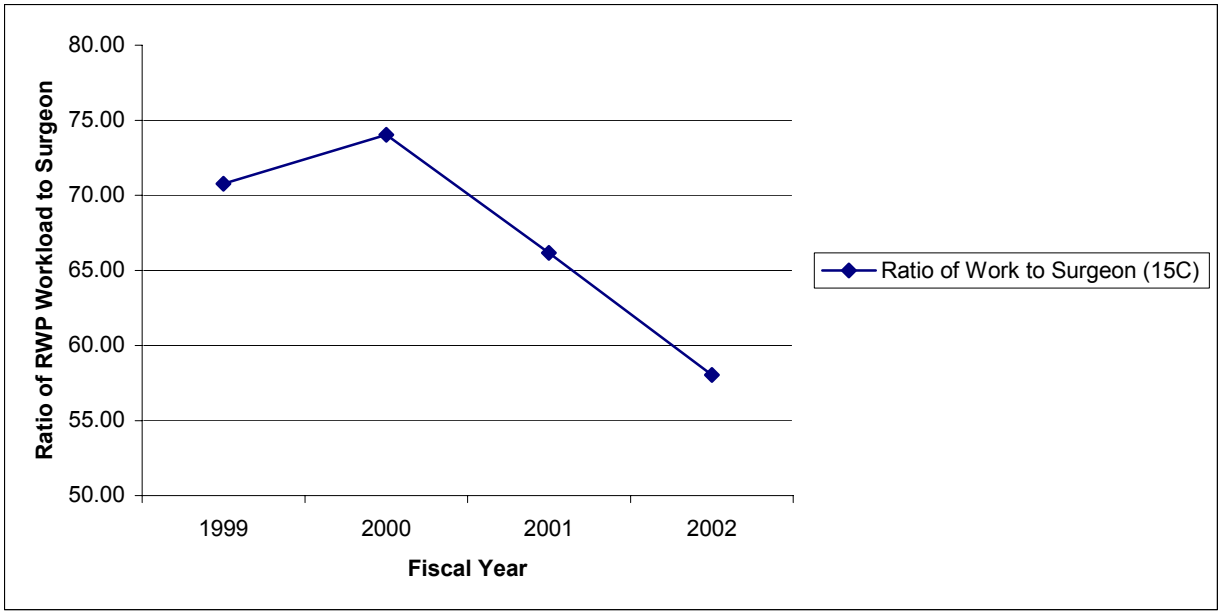


Figure 23. Ratio of RWP Inpatient Workload per Surgeon (15C)

This more narrow approach to workload trending shows that the decline in work per general surgeon is not of the same magnitude as seen by the larger aggregate groups above in Figure 22. Nonetheless, it is a downward trend that bears monitoring.

Examining the inpatient workload at the third level MEPRS code for a specific work center (Appendix C) and comparing it to the E/S of like specialists from 1999 to 2002 (Appendix F) shows that the ratio of workload per surgeon for neurosurgery (ABD) decreased by 53 percent, ophthalmology (ABE) decreased by 17 percent, otolaryngology (ABG) decreased by 26 percent, and urology (ABK) decreased by 28 percent.

The same methodology as was used for general surgery was performed for orthopedic surgeons (15H). The orthopedic work center, AE, does not fall under the same summary account as the other surgeons and thus has been evaluated separately here. One of the sub accounts for AE includes podiatric medicine (AEB). This work center was included in this analysis, though in reality this is workload not typically performed by podiatrists. The workload as a percentage for podiatric medicine accounted for no more than 1.8 percent in the final analysis and so podiatric medicine workload counts were left in the calculations. The table and figure below are presented as the workload for orthopedic surgeons for fiscal years 1999 to 2002.

Table 24. Ratio of Weighted Inpatient Surgical Workload to E/S of Orthopedic Surgeons (15H)

	RWP Workload for Orthopedics (AE). See Appendix C	E/S of Orthopedic Surgeons (15H) See Appendix E.	Ratio of Workload to E/S of Orthopedic Medicine
1999	7,079.22	158	44.81
2000	6,779.18	160	42.37
2001	6,371.75	174	36.62
2002	5,705.38	181	31.52
Overall Percent Change 1999 - 2002			- 29.66%

Source: SIDR and BUMIS

The ratio of work per orthopedic surgeon for inpatient orthopedic care demonstrates a steady downward trend. Using 1999 as the base year, there has been a 30 percent decline in the amount of inpatient orthopedic workload when compared to 2002. This is a significant finding. Information from Chapter II would indicate that it is questionable whether this decline in inpatient surgery is being "made up for" on the outpatient side of the house. The graphical representation of orthopedic workload ratios (along with other specialties) can be found in Figure 24 on the next page.

For comparison purposes, Figure 24 below was included to give an idea of the workload per provider by specialty area. This figure represents the RWP for each fiscal year by primary subspecialty code (using the general category code found in Appendix E). From the graph it appears that on average, the OB/GYN providers have more workload in comparison to the other specialty areas. The only specialty that appears to be experiencing a consistent increase in the inpatient workload per provider would be the Internal Medicine specialty. Inpatient workload has increased by almost 19 percent for the subspecialty. This increase per provider is a function of both a decline in the number of Internal Medicine (16R) doctors and a simultaneous increase in workload.

In the end, this data seems to indicate that while other work centers are experiencing either a relatively flat or slightly increasing workload per provider, the

weighted inpatient workload of the surgical areas of Navy Medicine (AB and AE) appears to be decreasing.

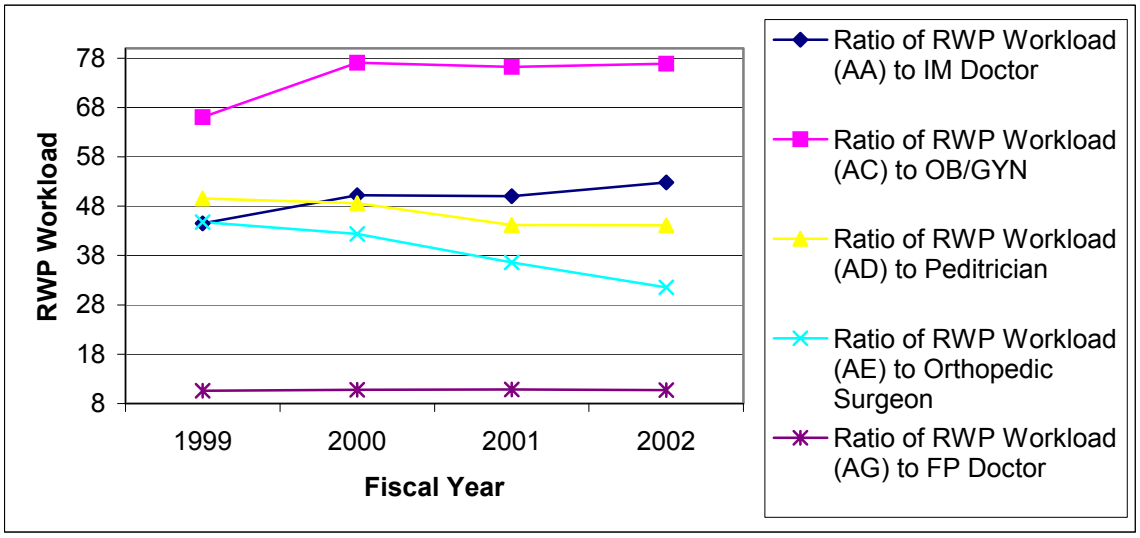


Figure 24. Ratio of RWP Inpatient Workload to Internal Medicine (16R), OB/GYN (15E), Pediatrician (16V), Orthopedic Surgeon (15E) and Family Practice Doctor (16Q)

E. OUTPATIENT TREND ANALYSIS BY PHYSICIAN SPECIALTY

The next step was to use the outpatient workload performed as Same Day Surgeries. Using our convention from before, SDS represents an ambulatory procedure visit and is designated as a fourth level MEPRS code that ends in a "5". Using the same information found in Chapter II and E/S data in Chapter III, a more direct comparison or ratio of specific workload to specialist can be made. This type of analysis should be better able to isolate the workload changes by specialty and show where or if workload shifts have occurred by specialty. Again, we have chosen the weighted workload of the Relative Value Unit (RVU) for our analysis. This measure is used to determine the comparative worth of a physician's services based upon the amount of resources used during that visit. The generally accepted principle is that the higher the RVU, the more involved and complex the patient visit is. While a direct comparison cannot be made between the inpatient RWP workload metric and the outpatient RVU workload metric, they are useful in determining the magnitude of work performed.

The first clinic evaluated was the General Surgery Clinic (BBA5) to determine ratios of SDS work to general surgeon (15C).

	RVU Workload for General Surgery Clinic - SDS (BBA5)	E/S of General Surgeons (15C) See Appendix E.	Ratio of Workload to E/S of General Surgery Clinic
1999	55,401.83	224	247.33
2000	50,954.19	213	239.22
2001	51,301.03	223	230.05
2002	64,426.95	239	269.57
Overall Percent Change 1999 - 2002			8.99%

Table 25. Ratio of RVU Outpatient SDS Workload (BBA5) to General Surgeon (15C)
Source: SADR and BUMIS

We can see that there has been an increase in overall outpatient surgical workload by 9 percent. This figure may be somewhat misleading because we are looking at only the BBA5 clinic for workload while using the E/S for general category 15C. Category 15C includes not only general surgeons, but cardio/thoracic, colon/rectal, pediatric, plastic, and peripheral vascular surgeons. This being the case, a more accurate way to depict this workload may be to sum the SDS workload for the work centers General Surgery Clinic (BBA5), Plastic Surgery Clinic (BBG5), Proctology Clinic (BBH5), Pediatric Surgery Clinic (BBJ5), and the Peripheral Vascular Surgery Clinic (BBK5). There was no workload counted for the Cardiovascular and Thoracic Surgery Clinic (BBB5), hence those work centers were eliminated from this next analysis. The results of this analysis yielded the following matrix and results.

Fiscal Year	Sum of RVU Workload for SDS: BBA5 + BBG5 + BBH5 + BBJ5 + BBK5	E/S of General Surgeons (15C) See Appendix E.	Ratio of Workload to E/S for General Surgery Clinics
1999	68490.68	224	305.76
2000	64080.86	213	300.85
2001	66602.08	223	298.66
2002	84125.61	239	351.99
Overall Percent Change 1999 - 2002			15.12 %

Table 26. Ratio of RVU Outpatient SDS Workload for the Surgery Clinics of BBA5 + BBG5 + BBH5 + BBJ5 + BBK5 to the Category of General Surgeon (15C)
Source: SADR and BUMIS

Table 26 presents some evidence that the weighted workload seen in the selected SDS clinics, on average, has increased by 15 percent from 1999 to 2002. If you compare this to the weighted workload change on the inpatient side of patient care (a decrease of 17.99 percent) using similar methodology, then we observe almost a complete switch of areas in which surgical patients are cared for in Navy Medicine. But because we are only comparing 1999 to 2002, it is interesting to note that in the middle years (2000 and 2001), there was a slight downward trend in this measurement of work per general surgeon. The bulk of the workload can be attributed to the increase in workload in the Proctology clinic (547 percent increase in workload) and Pediatric Surgery clinics (166 percent increase in workload). Because of the initial downward change in workload per surgeon and then the sharp increase between 2001 and 2002, it is difficult to ascertain a specific trend. These developments will need to be followed over time to see if a clear trend is emerging.

The next few tables present the same type of information by clinic specialty and provider subspecialty. This allows for a closer workload and trend analysis.

	RVU Workload for Neurosurgery SDS (BBC5)	E/S of Neurosurgeons (15D). See Appendix E.	Ratio of Workload to E/S of Neurosurgery Clinic
1999	5600.89	17	329.46
2000	6430.03	19	338.42
2001	1689.17	23	73.44
2002	2932.88	26	112.80
Overall Percent Change 1999 - 2002			-65.76%

Table 27. Ratio of RVU Outpatient SDS Workload (BBC5) to Neurosurgeon (15D)
Source: SADR and BUMIS

When comparing the change in outpatient SDS workload per surgeon (-66 percent) to the inpatient workload per surgeon for the similar work center of neurosurgery (ABD), there was a decrease in inpatient workload of 53 percent (Appendix C). Both the outpatient and inpatient neurosurgical workloads have decreased significantly.

	RVU Workload for Ophthalmology Clinic - SDS (BBD5)	E/S of Ophthalmologists (15G) See Appendix E.	Ratio of Workload to E/S of Ophthalmology Clinic
1999	33510.58	81	413.71
2000	26042.24	78	333.87
2001	24310.15	79	307.72
2002	26599.43	81	328.39
Overall Percent Change 1999 - 2002			- 20.62%

Table 28. Ratio of RVU Outpatient SDS Workload (BBD5) to Ophthalmologist (15G)
Source: SADR and BUMIS

Using the ratio of work to surgeon again, here we see almost a 21 percent decrease in relative surgical workload per ophthalmologist, while at the same time we also observed a 17 percent decline in inpatient ophthalmologic workload (ABE) found in

Appendix C. Once again, it appears that both areas have seen significant decreases in surgical workload.

	RVU Workload for Otolaryngology Clinic - SDS (BBF5)	E/S of Otolaryngologist (15I) See Appendix E.	Ratio of Workload to E/S of Otolaryngology Clinic
1999	51928.67	82	633.28
2000	49068.39	78	629.08
2001	45438.74	75	605.85
2002	45272.06	80	565.90
Overall Percent Change 1999 - 2002			-10.64%

Table 29. Ratio of RVU Outpatient SDS Workload (BBF5) to Otolaryngologists (15I)
Source: SADR and BUMIS

While the relative outpatient workload of otolaryngologists has declined by approximately 11 percent, there was a decrease of 26 percent in the inpatient area (ABG - in Appendix C).

	RVU Workload for Urology Clinic - SDS (BBI5)	E/S of Urologists (15J) See Appendix E.	Ratio of Workload to E/S of Urology Clinic
1999	18210.67	52	350.21
2000	17414.01	53	328.57
2001	14972.95	49	305.57
2002	19336.8	51	379.15
Overall Percent Change 1999 - 2002			8.27%

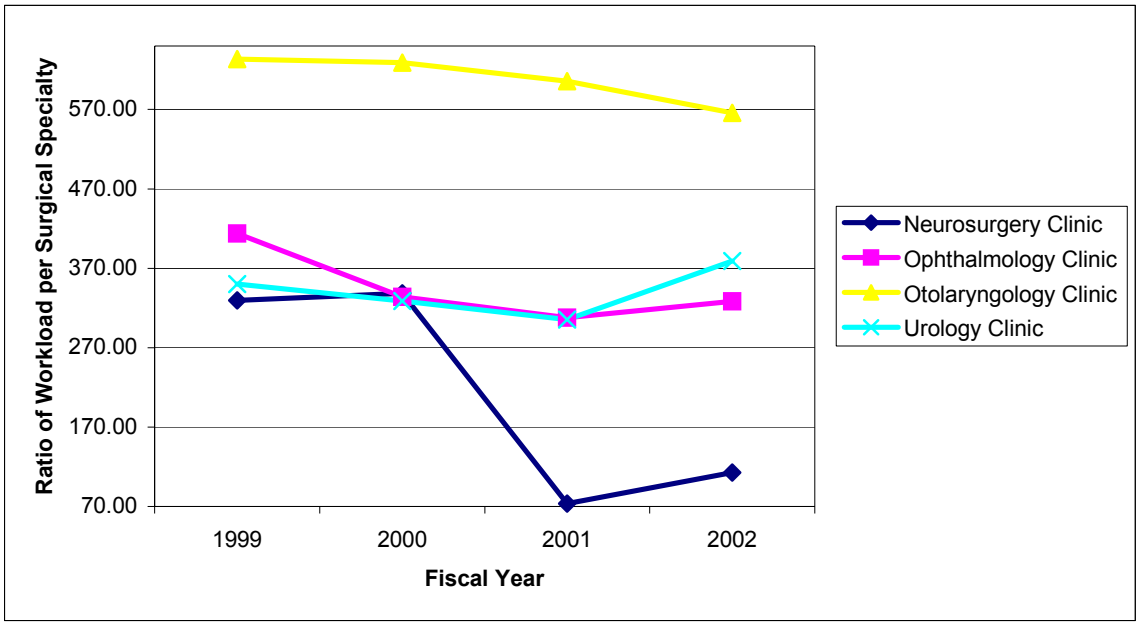
Table 30. Ratio of RVU Outpatient SDS Workload (BBI5) to Urologists (15J)
Source: SADR and BUMIS

Other than general surgery, this is the first specialty clinic where we observed a slight increase in relative outpatient workload. The ratio of workload per urologists

increased by 8 percent on the outpatient side while a decrease of 28 percent relative workload was observed in inpatient care (Appendix C).

To assist in visualizing the data presented in the previous four tables, Figure 25 is helpful.

Figure 25. Trend of the Outpatient Ratio of Work per Surgical Specialty



Source: SADR and BUMIS

Figure 25 more clearly shows the trends of workload per surgical specialty. It would appear that Otolaryngolgists have a higher relative SDS workload than the other specialties. This graph also shows the significant decrease in SDS workload per neurosurgeon. This relative decrease is due to the combination of the increase in the number of physicians who have 15D (neurosurgeon) as a primary subspecialty and the overall decrease in neurosurgical SDS workload.

In order to assist in seeing the changes in relative workload per provider and comparing the inpatient changes to outpatient SDS changes, the table below shows a side by side comparison. This comparison summarizes the changes noted in the previous discussions covering the years 1999 to 2002.

% Change from 1999 – 2002 by Specialty	Overall % Change in Weighted Surgical Inpatient Workload per Specialist	Overall % Change in Weighted SDS Workload per Specialist
General Surgery	-17.99 %	15.52 %
Neurosurgery	- 52.62 %	-65.76 %
Ophthalmology	-17.07 %	-20.62 %
Otolaryngology	-26.37 %	- 10.64 %
Urology	-27.85 %	8.27 %
Orthopedics	-29.66 %	-13.65 %

Table 31. Comparison of Overall Percentage Change in Inpatient Surgical Workload to SDS Workload per Specialist

Given the set of assumptions in section B, with the exception of the General Surgery category and Urology, Table 31 indicates that the amount of surgical workload per specialist has decreased in both the outpatient SDS and inpatient areas. While looking at the numbers alone gives a picture of what is happening in terms of workload per provider, it does little to explain the reasons for this occurrence. This is one of the significant limitations of this research.

Next, this research looked at the relationship between emergency room (ER) workload and the number of physicians who carry 16P (Emergency Medicine) as a primary subspecialty. It is generally felt that the ER doctors would provide a key role in the treatment and management of combat casualties. These individuals on a daily basis are faced with relatively high patient loads and are required to make accurate and timely decisions regarding patient care. Their potential exposure to injuries that may most closely resemble those that occur in combat, at least in the initial stages, is probably higher than any other type of doctor. Recall from the last chapter that there has also been a large increase (100 percent from 1990 to 2002) in the number or ER doctors, presumably to meet the peacetime requirements.

The difference here between the workload measurements of the ER work center (BI) and the work centers evaluated above is that the ER is considered an outpatient

clinic and so no inpatient comparison can be made. The information below shows the ratio of work performed in the ER work center, Navy wide, for 1999 to 2000.

Table 32. Ratio of RVU Workload to ER Physician (16P)

	RVU Workload Metric	E/S of ER Physicians	Ratio of RVU to ER Physicians
1999	412,437.2	153	2695.668
2000	444,507.9	170	2614.752
2001	501,641.5	182	2756.272
2002	534,175	176	3035.085
Overall Percent Change 1999 - 2002			12.59 %

Source: SADR and BUMIS

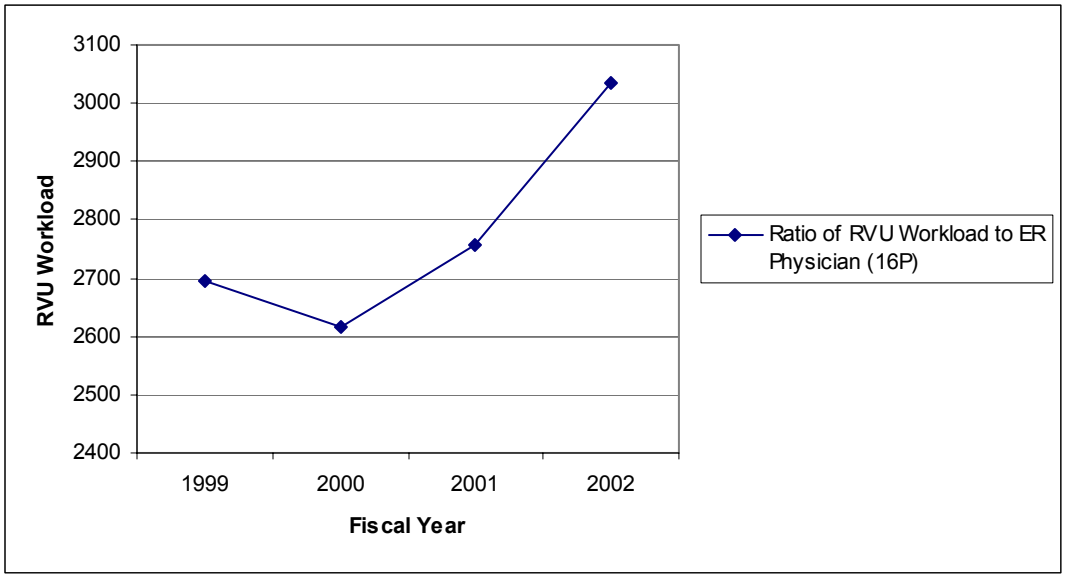


Figure 26. Ratio of Workload to the Number of Emergency Medicine Doctors

Despite a small decrease in workload relative to the number of ER doctors in FY2000, there has been a relative increase in the amount of work per ER physician by almost 13 percent from 1999 to 2002. This increase in workload occurs despite a 15 percent increase in the number of ER physicians during this same period. This also would tend to imply that the Emergency Departments have been increasingly busy over the last several years.

In summary, the only specialty that has seen an increase in inpatient workload evaluated in this research was the Internal Medicine (16R) physician and this increased by 19 percent. This data shows that inpatient surgical workload per provider has declined by 18 percent between 1999 and 2002 and that inpatient orthopedic workload per provider has decreased by almost 30 percent. Outpatient workload volume was shown to have increased by 13 percent per Emergency Medicine physician (16P) between 1999 and 2002.

The above data suggests that per physician (all specialties) in Navy Medicine, hospital admissions have declined by almost 50 percent between 1992 and 2001. Between 1999 and 2002, weighted inpatient surgical workload per the general category of surgeon (primary subspecialties 15C, 15D, 15G, 15I, and 15J) as seen in Table 22, has declined by almost 25 percent. Looking more specifically at the general surgeon category (15C), this data indicates that weighted inpatient workload has declined by 18 percent. Orthopedic inpatient workload per orthopedic surgeon had declined by 30 percent between 1999 and 2002.

Does this represent a troubling trend? That cannot be answered here, but it is a trend that should be monitored. It may be that this observed decrease in inpatient surgical workload has "normalized" the workload per surgeon (i.e., the inpatient surgical workload seen in previous years was excessive and now has reached a more acceptable level). If this were the case, then the downward trend would not be as interesting. Also, while not evaluated here, the author believes that the administrative workload (burden) per surgeon has increased during this same time period. This should be evaluated and balanced against the decline in apparent inpatient workload. While the data does not suggest this, it may be that the outpatient workload "gained" over this period is more significant than the inpatient workload "lost" and requires further analysis.

F. WORKLOAD TREND ANALYSIS FOR NURSES

The methodology used in the physician analysis above provides a direct link between the specialty of the doctor and the work center where the work was documented. This direct link is not apparent or even existent when evaluating the nurse's workload or

attempting to correlate the number of nurses with a specific work center. For instance, a critical care nurse will care for patients who are admitted under different services (medial, surgical, obstetrics, pediatrics, orthopedics, etc.). There are also a number of hospitals in the Navy that have "multi-service units" which care for all types of patients, no matter what service admits them. This means that the nursing staff cares for a range of patients that includes mothers in labor and their newborns to retirees on their deathbed. It is not uncommon to have a medical/surgical nurse (1910) caring for a newborn in a nursery one day and the next day caring for a patient admitted with chest pain and coronary artery disease. The Nurse Corps does have a peri-natal subspecialty (1920) and a critical care subspecialty (1960), but it is only at the larger MTFs where they may work in the specific clinical area that matches their primary subspecialty. This "diversity of assignments" complicates the linkage between correlating primary subspecialty and the work center where the work is captured as was done for the physicians.

Another complicating factor for this type of analysis with nursing is that the inpatient workload is not recorded using the MEPRS system as was done for other workload data presented in this analysis. This inpatient workload is recorded by each facility using the Workload Management System for Nursing (WMSN). WMSN is a local database that provides a patient acuity classification structure that is designed to determine daily staffing based upon an assessment of patient care needs. According to the DoD WMSN Unit Manual, "WMSN captures nursing workload based on patient acuity and provides information for effective and efficient allocation and utilization of nursing personnel. DoD WMSN acuity is the workload factor used annually to determine nursing manpower requirements for the peacetime inpatient mission."[164]

The data that is collected in WMSN at each MTF does not go into the Expense Assignment System (EAS IV) to make any workload decisions. It is essentially a tool that is meant for use at the MTF and patient unit level. This allows for the individual MTF to assess workload and staffing changes at a local level (shifting resources from one inpatient unit to another), but does not provide a global picture of what is occurring regarding inpatient workload for Navy Medicine. Approximately 12 out of 20 or so

[164] Department of Defense Workload Management System for Nursing, Version 4.1. Unit Manual. p. ii. [https://imcenter.med.navy.mil/wmsn/Manuals/unit41.doc]. Accessed January 2003.

facilities do submit monthly workload reports, but these reports are not utilized by Navy Medicine for manpower decisions.[165] These reports haven't been consistently reported since 1999.[166]

In addition to this lack of a global perspective on inpatient nursing workload, there have been many reported problems with the reliability of the data obtained from WMSN. These problems can be primarily traced to variability and differing interpretations of the persons entering the data. The Navy is currently evaluating new systems to correct and enhance the current workload system shortfalls.

Because of these limitations with the WMSN, and because this workload is not reported in MEPRS, this research will adapt its methodology to allow for some overall comparisons among nursing specialties, but on a more limited basis. These comparisons are explained below.

Since the focus of this research has been surgical care, we will start with the Peri-Operative nursing specialty (1950). Individuals who are in this specialty practice in a variety of settings that include "military treatment facilities, fleet hospitals, hospital ships, and the Fleet Marine Force (FMF)."[167] "They are responsible for the nursing care prior to surgery including the preoperative, intraoperative, and postoperative stages of the patient's surgical experience." [168] Whether a surgical case in performed as a SDS or as a case that will be admitted to the hospital, the perioperative nurse is involved in the care of these patients.

A portion of the workload that is captured under the summary account AB (Inpatient Surgical Care) includes consultative evaluation for referral patients. This work is labor that is performed by the physician. The perioperative nurse is not involved in this capture of workload. The MEPRS codes that begin with "D" fall under the functional

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[165] Phone conversation with Sharafat Yousufzai at the TRICARE Management Agency, February 2003.

[166] Email from CDR Christine Boltz, Head, Analysis & Evaluation, Health Care Operations and Plans Naval Medical Center San Diego, March 2002.

[167] Perioperative Nursing Home Page. [https://bumed.med.navy.mil/med00nc/SpecialtyLeaderPage/perioperative_nursing/default.htm]. Accessed February 2003.

[168] Ibid.

account of ancillary services. The second level or summary account DF is for Surgical Services and DG is for Same Day Services. These sub-accounts use minutes of service as their metric for determining expenses and workload. Data was requested from NMIMC for all "D" level MEPRS codes, similar to the data presented in earlier chapters. Unlike the data received for the "A" and "B" MEPRS codes, the data received was inconsistent and appeared to have significant quality problems. For example, for one year, one MTF (a smaller Navy MTF) was recording 85 percent of all listed Same Day Surgery services. This anomaly, along with other inconsistencies, prompted the discarding of this data and eliminated its use for this and subsequent analysis. It was decided to use the workload data collected for SDS as the comparison data for perioperative nurses because it appeared more reliable.

Because of the direct link that could be attributed to a physician specialty and the workload associated with a specialty clinic, a weighted measure was used. This direct link is not established for the nursing workload and therefore an un-weighted and more indirect workload metric was used for this analysis. For similar reasons, the direct link to inpatient surgical workload could not be attributed to perioperative nurses. This prompted the use of total SDS visits (B**5) to be utilized as the comparison metric for perioperative nurses. This comparison shown in Table 33 below exhibits the ratio of SDS visits to the E/S of perioperative nurses (1950) for each year.

Table 33. Ratio of Total SDS Visits to E/S of Perioperative Nurses

	Total SDS Visits Workload for B5 See Table 11.**	**E/S of Perioperative Nurses (1950) See Appendix H.**	**Ratio of SDS Visits to Nurse**
1999	26,782	243	110.21
2000	24,910	240	103.79
2001	25,725	235	109.47
2002	32,303	268	120.53
		Overall Percent Change 1999 - 2002	9.36%

Source: SADR and BUMIS

From information presented in Chapter III, Table 19, we see that the perioperative nurse subspecialty has increased by over 9 percent from 1990 to 2002. From 1999 to

2002, the overall increase in end strength for perioperative nurses has increased over 10 percent. Using Table 12 from Chapter II, we observe that the un-weighted workload of Raw Visits for outpatient SDS surgical care has increased by almost 21 percent. So despite the increase in E/S of perioperative nurses, the ratio of workload per nurse has increased by 9 percent between 1999 and 2002.

A similar analysis was performed using total emergency room visits as the workload measure and the total E/S of emergency nurses (1945 subspecialty) for the same years. This matrix is present below.

Table 34. Ratio of ER Visits to ER Nurse

	Total Emergency Room Visits for Navy Medicine	E/S of ER Nurses (1945) See Appendix H.	Ratio of ER Visits to ER Nurse
1999	402,376	145	2,775.01
2000	425,843	165	2,580.87
2001	478,793	164	2,919.47
2002	499,797	180	2,776.65
Overall Percent Change 1999 - 2002			0.06%

Source: SADR and BUMIS

This matrix shows that while there was a 24 percent increase in the number of ER visits in Navy Medicine between 1999 and 2002, the number of nurses with a primary subspecialty of 1945 also increased by 24 percent (Table 18). These changes net an overall change of zero percent.

G. CONCLUSION

This chapter has brought together the elements of workload and E/S staffing based on primary subspecialties in an effort to present a picture of the workload per provider over the last few years. This was done by looking at weighted workload, in both the inpatient and outpatient areas. Additionally, the workload for surgical SDS (B**5 MEPRS codes) was examined to evaluate if the "lost" inpatient workload is being seen under the outpatient surgical workload category. This "swap" of workload (from inpatient

to outpatient surgery) is evident for general surgeons, but not for the other surgical specialties (Table 31).

The decreasing workload per provider found in this analysis is noteworthy, but it is important that subject matter experts as well as other health care analysts evaluate this information, critique it, and report on the "impact" on medical readiness (if any). For example, is it reasonable to assume that evaluating SDS neurosurgical workload is even reasonable given the nature of its specialty? Such questions and analysis of subject matter experts would provide useful and insightful information to this trend analysis.

Additionally, from this methodology, it was impossible to determine how many providers were actually at the point of direct patient care. For example, we observed that the apparent inpatient workload per uniformed internal medicine physician has been increasing over the near term. What we don't know is how much of that workload is "outsourced" to civilian providers inside the MTFs. It may be possible that while the number of uniformed providers has decreased in recent years, the number of contracted providers has increased in the MTFs to help offset the increase in internal medicine workload. The set of assumptions in section B is necessary to more fully understand the data that is presented here.

Regardless of the interpretations of the subject matter experts, it may be important for Navy Medicine to articulate how the changes in inpatient and outpatient surgical workload affects medical readiness of the organization and how current practices enhance and justify current operational functions.

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V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A. SUMMARY

Provision of state of the art health care requires a multifaceted, elaborate and sophisticated organization. Large health care organizations face additional challenges of managing resources and operating efficiently. The Military Health System (MHS) is one of the world's largest health care systems. Its size alone points to the complexity that faces this organization. Adding to this complexity is the sometimes competing nature of the dual missions of military medicine. The MHS has two primary missions. One mission is to provide timely, quality health services to its beneficiary population through the direct care system of Military Treatment Facilities (MTFs), commonly referred to as the *health benefit mission*. The other mission involves the tremendous responsibility of providing combat health services to the men and women of the armed services in forward areas of operation and is known as the *readiness mission*. The need for uniformed personnel of MHS stems primarily from the *readiness mission* to care for military personnel in the operational military environment and during wartime.

The complex roles of the MHS are many times intertwined in a series of tradeoffs between the resources of time, talent, and money. Ideally, these two missions would operate hand in hand, working lockstep with one another, one directly supporting the other. In a perfect world, the case mix and volume of patients during peacetime would be related to the MHS's wartime missions. But often the support provided by one mission for the other is tangential in nature, and at other times conflicting. The MHS "has always been challenged by the problem of reconciling the different requirements for the surgically intensive combat support environment and the different mix of providers necessary to support the routine, peacetime mission."[169] This thesis has looked at one aspect of the health benefit mission and how that role may "support" the readiness mission. Specifically, this research has provided an analysis of Navy Medicine's inpatient and outpatient surgical workload, the military staffing to perform that workload and its relationship to the readiness mission.

[169] Email from CAPT Jack Smith, MC, USN - Director of Clinical Program Policy Integration, OASD (HA). November 2002.

The Navy has a responsibility to its patients to provide quality health care. It also has a fiscal responsibility to Congress and ultimately the tax payer, to provide medical services as economically as possible. In its attempt to control costs and be good stewards of the tax payer's dollars, the MHS uses many of the "tools" and organizational structures of the civilian sector. One such structure is managed care.

Over the last decade or so, the MHS has adopted many strategies of the civilian managed care organizations as part of its own efforts to improve cost savings, service, quality, access to care, and business practices. One of the cornerstones of managed care is its increased emphasis on providing successful community based and worksite prevention-oriented, coordinated healthcare. Patients reap benefits from consistent healthcare and improved overall health. This focus on developing healthy communities makes good business and clinical sense from the managed care/population health perspective.

But while this focus may have benefits in terms of cost avoidance and improved overall health for military members, there is concern about its impact on the ability of the MHS to provide optimal care in the surgically intensive environment a wartime scenario is likely to produce. It is this theme of viewing medical readiness through the lens of peacetime health care delivery that is the hub of this research.

Under the best of circumstances, peacetime medical care serves as the training ground for the readiness mission. To some extent peacetime care accomplishes this objective, which is the way the system was designed. But is it possible that there is an increasing risk corridor in which the peacetime medical model comes less and less to resemble or support the development of skill sets that may be needed during wartime? If this is the case, can an organization continue to effectively meet the expectations of both missions in a resource constrained environment? Although this is an old question for Navy Medicine, the managed care model is relatively new and there is little published literature to assess the impact of this model on the readiness mission. With the increasing costs of health care, it becomes more and more important that the infrastructure and personnel in Navy Medicine be used efficiently and relevant to the readiness mission.

The primary research question for this study was: Has there been a change in wartime-relevant medical workload and medical staffing over the last decade, impacting medical readiness? It was felt that the skills needed to care for wartime casualties should have a surgically intensive focus to care for those wounded in action. Recent studies have suggested that wounded in action, chemical and biological casualties are likely to increase in future conflicts. With the mounting likelihood of armed battles in large urban areas, the increased propensity for civilian casualties will add to the necessity for specific surgical and first responder skill sets. It has been suggested that the demands placed on Navy Medicine will "require enhanced skills of those providing care, a focus on patient stabilization and preparation for evacuation; perhaps requiring a larger and different mix of expertise onsite."[170] Recent evidence from the Persian Gulf War and the initial stages of Operation Enduring Freedom have demonstrated improved field preventive medicine efforts and surveillance and have decreased the incidence of disease non-battle injuries.[171] This is very beneficial to the combat forces, but it also signifies the need specially trained medical personnel.

Workload was determined to be a function of volume and type of patients seen in Navy Medicine. This thesis began with a broad overview of inpatient and outpatient visits, followed by a focus on inpatient and surgical workload. Outpatient workload was presented to provide a more complete picture of overall workload for the organization. Subsequently, the relative work per specialist was examined, primarily from a surgical standpoint. Ultimately, if wartime relevant medical workload is viewed through a peacetime lens and is defined as surgical in nature, it is clear that there have been some substantial changes in recent years. The most notable change has been the shift in focus of the surgical caseload from inpatient care to outpatient surgery. This change has substantially reduced the number of surgical admissions to Navy's MTFs over the last decade.

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[170] Need, J. T. *Operational Medicine From The Sea – A Revolution in Medical Affairs.* Naval War College. Newport, Rhode Island. June 1997.

[171] Military Medicine in Operations Desert Shield and Desert Storm: The Navy Forward Laboratory, Biological Warfare Detection, and Preventive Medicine. [http://www.gulflink.osd.mil/medical/med_navy.htm]. Accessed December 2002; Bilski, T. R. *Steaming to Assist Charlie Papa.* Navy Medicine. November-December 2002.

The question that remains unanswered is whether or not these changes impact the organization's medical readiness. If the assertion is that wartime relevant workload resembles inpatient surgical workload, then the answer is a definitive yes. However, it is not clear that this assertion can be made. Is there a difference between the set of skills needed for the procedures used in ambulatory surgery and those required for surgeries involving hospitalization? And if those differences exist, do they impact the readiness of the organization? This is for subject matter experts to explore. Some experts have argued that there is extensive overlap between technical skills that are needed to treat [combat] trauma patients and those skills that are practiced during the routine elective procedures that constitute most surgical practices. Others have made the claim that skill acquisition and professional competency are context dependent and involve relevant hands on experience and exposure. Noted surgeon, Dr. Arthur Smith had this to say about the differences between same day surgery and inpatient surgery and its relevance to the readiness mission:

> Basically, what would appear to be needed is a fundamental sense of flexibility in adapting to the fundamental availabilities of numbers of patients at hand, the numbers of casualties anticipated, evacuation capabilities and distances involved in evacuation. In addition, the lack of nursing support in the field, the unpredictable conditions of battle, and the evacuation distances involved are also factored into the equation. In sum, I am not sure that the issue of outpatient or inpatient surgery experience has much relevance to the gaps in surgical management seen in the early phases of any war.[172]

This would seem to imply that there are many other factors to consider other than just the requisite skill sets needed to care for combat casualties. While this may seem obvious, recent history has suggested that this skill set is not being adequately developed. "Unfortunately, the Army CENTCOM Surgeon during Desert Shield/Storm described the fact that most military physicians did not understand the differences between combat surgery and peacetime surgery, resulting in their trying to do too much at initial treatment, thereby tying up operating rooms excessively and consuming limited supplies.

[172] Email from CAPT (Dr.) Arthur Smith, clinical professor of surgery and of military and emergency medicine at the Uniformed Services University of the Health Sciences in Bethesda, Maryland. February 2003.

They had no idea as to the classic lessons of field surgery."[173] This example may point to the impact of the increasingly dichotomous nature of our dual mission medical force. There is also concern that the decrease in inpatient surgical workload may likely impact the readiness of the staff that cares for these individuals, most notably, the nursing and hospital corps staff. This is an area that would be ripe for further research and exploration.

Some would point out that the workload in outpatient surgical specialty clinics enhances medical readiness by arguing that any time a patient is seen in the military medical system, it can be considered training, hence value added. Others would argue that what is more important is the type of patients seen. Still others would argue that what matters is a combination of volume and specific type of workload. This is an issue for the subject matter experts to seriously consider. These same questions should be extended to the primary care arena as well. While these questions are not answered here, they do pose serious issues which should be explored further within the Navy Medicine organization. A summary of the findings of this research is presented below.

For all of Navy Medicine MTFs from 1992 through 2001, the number of inpatient admissions has decreased by over 51 percent (Table 3). During this same time period, the total number of outpatient visits has declined by almost 23 percent (Table 3). Neither of these numbers appears very surprising for this time period. Recalling that a significant number of MTFs were either closed or reduced in size during this time frame, it is easy to see why the numbers have declined to such a drastic degree. Additionally, the transformation of Navy Medicine's medical model from one of treatment and intervention to a managed care model focused on health promotion, prevention and population health is designed to produce a healthier population, requiring fewer hospitalizations and fewer outpatient visits. With the health plan options offered under TRICARE, beneficiaries may have easier access to civilian providers "out in town" and choose this as their health care option. This choice of health care may add to the overall decrease in the number of inpatient hospitalizations and outpatient visits seen throughout Navy Medicine.

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[173] Ibid.

Using raw counts of production for measurement of inpatient workload between 1999 and 2002 (Tables 4 and 5), the overall inpatient workload has increased across Navy Medicine by 1.4 to 2.9 percent, depending on the measure used. The highest percentage increases were found in Family Practice (AG), Medical Care (AA), and OB/GYN (AC). However, the Relative Weighted Product (RWP) for inpatient care, a measure that reflects source of admission, case complexity, length of hospital stay, disposition status in conjunction with the patient's diagnosis and other thresholds as compared to other patients, decreased by almost 4 percent (Table 6). The slight increase in measures for raw inpatient workload and small decrease in weighted inpatient workload would tend to suggest that there are more patients being admitted for inpatient care across Navy Medicine, but the stays are shorter and/or resource consumption has decreased. It is a commonly accepted notion that the patients who are seen in the MTFs today are "sicker than they used to be" and their hospital stays are shorter than in years past.

It may be that the weighted workload measures used in this analysis are not optimal for the analysis conducted, but over the period examined, there does not appear to be a substantial difference between raw inpatient workload measures and weighted inpatient workload measures. The small difference between raw and weighted measures may also indicate a less complex patient population. These distinctions are impossible to resolve with the data used in this research. Other than the decreases seen in psychiatric admissions, the most significant decreases in weighted inpatient workload for all of Navy Medicine occurred in Orthopedic Care (AE) and Surgical Care (AB), with changes of –19.4 percent and –17.7 percent respectively. From 1999 to 2002, there has been a consistent decrease in inpatient surgical and orthopedic workload.

This thesis also examined the outpatient workload data for all of Navy Medicine. While outpatient visits from 1992 to 2001 decreased by over 20 percent (Table 3), more recent evidence suggests that from 1999 to 2002 total outpatient visits have increased by almost 30 percent (Table 8). Using the weighted workload information (using Relative Value Units) for this same data shows a similar increase in workload by almost 27 percent.

Examining the surgical side of outpatient workload and overall outpatient visits, we find that surgical outpatient care has increased by 22 percent (Table 8) between 1999 and 2002. But when one looks at the weighted values for this same information, we discover that the weighted outpatient surgical care has increased by only 12 percent (Table 9). This would suggest that the complexity and resource consumption of the outpatient surgical visits have not increased in direct proportion to the total number of surgical outpatient visits.

When evaluating the raw outpatient surgical workload more closely (Table 10) from 1999 to 2002, the it was found that the top three increases in volume, as a percentage, were the Neurosurgery Clinic (BBC), Plastic Surgery Clinic (BBG), and Pediatric Surgery Clinic (BBJ), with increases of 77 percent, 65 percent and 51 percent respectively. But if this outpatient care is broken out to the SDS workload of those same specialties (Table 13), we find a decrease in neurosurgery workload (BBC5) of almost 48 percent and a decrease in plastic surgery workload (BBG5) of 15 percent. Pediatric surgery outpatient workload, on the other hand, has increased by 166 percent over the same time period. Nearly half of all outpatient surgical visits are seen by either the General Surgery Clinic (BBA) or the Otolaryngology Clinic (BBF). From 1999 to 2002, these two clinics saw raw visit increases of 14 percent and 6 percent respectively.

Using weighted outpatient workload values (RVUs) for surgical care (Table 11), it is seen that the magnitude of change is not as great as the raw measures. The largest percentage increases of workload were found in the Neurosurgery Clinic (70 percent), Pediatric Surgery Clinic (59 percent) and the Pain Management Clinic (BBL) (53 percent). General Surgery (BBA) saw a weighted increase of only 5 percent over this same period. The Orthopedic Clinic (BEA) saw a slight decrease in workload over the same time period of -.54 percent.

The last portion of workload data used in this research was surgical Same Day Surgeries (SDS) or Ambulatory Procedure Visits. From 1999 to 2002, using the fourth level MEPRS code for Surgical Care (B**5), an increase in raw workload of 20.61 percent (Table 12) was found. Yet when looking at the weighted workload for the same clinics, only .16 percent increase was observed (Table 13). The largest increases were

found in the Proctology (BBH5), Pediatric Surgery (BBJ5), and General Surgery Clinics (BBA5). The Orthopedic Clinic (BEA5) during this same time period saw a decrease of minus 1.1 percent in weighted workload.

Little change in total end strength (ranging from -6.3 percent to +3.2 percent depending on the years used and corps) (Table 16) was found when analyzing the total number of uniformed doctors and nurses in Navy Medicine from 1990 to the present. While there have been shifts in certain specialties during this same time period, the overall change has been minimal compared to the decreases in end strength seen in the entire Navy organization (approximately -36 percent) (Table 15). The reason for this comparatively small change for Navy Medicine end strength is that the Total Health Care Support Readiness Requirement model is able to "justify" or delineate the specific medical requirements needed to support hypothesized amounts and types of casualties likely to be seen in wartime scenarios. It has been said that "Navy Medicine does not set the Requirement, Navy Medicine supports the Requirement."[174] This statement illustrates the dependence of Navy Medicine's force structure on the Defense Planning Guidance and the war scenarios developed by the Combatant Commanders.

While there has been little change in total end strength for doctors and nurses, there have been substantial changes in the number of doctors and nurses with particular specialties. Not all subspecialties were evaluated for this research (of particular note was the absence of analysis for anesthesia providers). For the Medical Corps, the notable changes between the years 1990 and 2002 are the increases in the number of uniformed Emergency Medicine Doctors (100 percent), Family Practice Doctors (57 percent), and Pediatricians (26 percent) (Table 17). It is likely that these changes reflect an emphasis on primary care and the adoption of a medical model that emphasizes outpatient care.

The most notable decreases in uniformed physician specialties found during this time frame include Urologists (-25 percent), Otolaryngologists (-18 percent), Internists (-17 percent), and General Surgeons (-7 percent). Three of four of these are surgical

[174] Franco, Rich. "MPN 101: Medical Manpower and THCSRR Processes Briefing." [http://www.changearchitect.com/manpower/PlenaryPresentations/THCSRRReadiness.ppt]. Accessed December 2002.

specialties (Table 17). Again, these changes probably reflect the changes seen in workload at the MTFs.

An examination of the relative workload by specialty, i.e., the amount of workload performed per uniformed physician specialty, shows some interesting trends (Table 31). It would appear that the amount of overall work performed by general surgeons has remained fairly constant when comparing inpatient surgical workload to outpatient surgical workload. This means that while there has been a decrease in inpatient surgical workload of almost 18 percent between 1999 and 2002, there has been a corresponding increase in outpatient surgical workload (16 percent) per general surgeon. This trend cannot be shown for the surgical specialties of neurosurgery, ophthalmology, otolaryngology or orthopedics. All these specialties have seen a decrease in both outpatient workload and inpatient workload per provider over this same time frame (using the set of assumptions as outlined in Section B of Chapter IV). The urology specialty has seen a significant decrease in inpatient workload (-28 percent) but a moderate increase (8 percent) in outpatient workload between 1999 and 2002. Emergency Room physicians have seen a relative increase in workload of almost 13 percent while Internal Medicine physicians have seen a increase in inpatient workload of 19 percent over the same time period.

When looking at a few of the nursing specialties between 1990 and 2002, we see a 58 percent decrease in the end strength of Ambulatory Care nurses (Table 18). This comes at a time when Navy Medicine is seeing an increasing number of outpatient visits in the ambulatory care setting. There have been substantial increases in end strength for Peri-natal nurses (34 percent), Medical/Surgical nurses (33 percent), Critical Care nurses (14 percent), and Peri-operative nurses (9 percent). These increases in end strength for inpatient and Peri-operative nurses appear consistent with meeting the personnel requirements of the readiness mission.

However, if viewed in light of workload trends and a declining inpatient population, these increases appear out of place. This could imply better nurse-to-patient ratios than in previous years. It could also mean that fewer nurses are at the point of direct patient care than in previous years. This distinction was impossible to make using

the data in this research. In apparent response to the peacetime mission workload, there have been increases in Emergency Room nurses (12 percent), Pediatric nurses (11 percent), and Nurse Practitioners (adding all Family Nurse Practitioners, Pediatric Nurse Practitioners, OB/GYN Nurse Practitioners and Mid-Wives) (84 percent).

The decrease in surgical inpatient admissions reduces the number of clinical experiences to which the inpatient nursing staff is exposed and may reduce opportunities to develop crucial clinical skills. The analysis of overall nursing workload was limited because of the lack of a central, standardized reporting workload system for nursing.

B. CONCLUSIONS

To some degree, the changes in workload and staffing identified here for the period 1990 to 2002 reflect the changing nature of the delivery of health care and in the Navy Medicine organization. These changes seem generally consistent with a resource constrained environment and the workload discussed. They are also sensible when considering the advantages and benefits (decreased incidence of illness, improved productivity, cost savings, etc.) that follow from efforts to improve the overall health of an organization. But do these changes signal a decreased focus on the readiness mission? Does this mean that the peacetime mission no longer supports the wartime mission? The data do not support that conclusion.

However, this increased focus on the development of a healthier population through population health and health promotion initiatives and improved business practices may be an indicator that there is an increased emphasis on the knowledge, skills, and abilities necessary to successfully operate the peacetime benefit mission when compared to those needed during war. There may be a widening gap between the skill sets needed to provide the health care required during peacetime and those needed to care for combat casualties likely to be faced during the wartime mission. Based on previous testimony by the Congressional Budget Office, peacetime care does provide some training for wartime, “but most of the care provided during peacetime is not

relevant to even non casualty wartime patient loads."[175] Additionally, "peacetime care gives military medical personnel almost no chance to practice their war-related skills."[176] It would appear that these "chances" may be decreasing when considering the changes to the workload seen in the peacetime benefit mission.

Other studies have shown that there is a disparity between the type of medical care provided during the peacetime benefit mission and the medical care needed during wars as part of the readiness mission. The question here is whether that disparity is widening. The Navy has undertaken a number of steps to narrow this gap in training and experience of its personnel through training programs, use of simulators, and residency initiatives working with the civilian sector. It is not clear what the financial and productivity cost of these will be. They may not be cheap, in that they require military personnel to be absent from their normal duties of providing peacetime care. There is also the opportunity cost of disrupting patient and provider relationships. And the issue of sustainment training becomes a revolving door for these kinds of costs. At a time when a focus of Navy Medicine is customer service, separating providers from their patient population may decrease beneficiary satisfaction.

Over the last decade the increase in operations other than war have been increasing opportunities to practice readiness skills. These are beneficial from a standpoint of developing critical skill sets and operational experience and are necessary for the organization. In addition, there have been revitalized and improved operational training initiatives (such as the Navy Trauma Training Center) along with organizational changes (implementation of Component UICs) that have focused efforts on the readiness mission. These efforts are to be applauded and continued and increased in scope.

In many ways the research for this thesis has been conducted from "the outside," viewing the spectrum of clinical workload and staffing without any previous experience with this information or data. Many variables, nuances and facets of a complete analysis cannot be explained by just looking at the numbers from a distance. In order to have a

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[175] Singer, N. M. CBO Testimony before the Subcommittee on Military Personnel Committee on National Security, U.S. House of Representatives on the *Wartime Mission of the Military Medical System.* March 1995.

[176] Ibid.

better understanding and interpretation of the measurements it is important to have some working knowledge of the data. This kind of understanding allows for necessary adjustments in data quality or manipulation. A working knowledge also affords differing approaches to looking at an issue.

In attempting to look at all of Navy Medicine's workload and end-strength data, the scope of this endeavor may have been too broad. An alternative methodology would have been to choose a specific MTF and evaluate its workload and staffing over time. If this methodology would have proven effective in isolating important changes in workload, it could then be applied to a larger context to provide a more definitive analysis. The limitations of the study notwithstanding, it has revealed some important and interesting changes over time, developments that merit further investigation, description and analysis.

With little change in the overall force structure of the Medical and Nurse Corps, the increasing costs of providing health care, and a changing military doctrine, it will become increasingly important for Navy Medicine to be able to demonstrate how the peacetime mission supports the wartime mission. Historically, the Surgeon Generals and other experts have contended that providing peacetime care for a largely non-active duty population is the best way to train medical personnel for wartime. The claim is made that these peacetime training practices also support goals such as attracting and retaining military physicians.[177] These practices are critical, but a new military doctrine may be the catalyst for force structure changes that reduce the requirement for military medical personnel.

The bottom line for this research is that an organization that is required to provide high quality support for such diverse missions using the same personnel and limited resources is unavoidably precarious. The vision of the MHS "is to attain world class stature as a health care system, one that meets all wartime and peacetime health and medical needs for the active military, retirees, their families, and others entitled

[177] Smith, A. M., Petersen, H. V. "Matching Fleet Medical Readiness to the New Naval Strategy." Naval War College Review, Winter 1997. [http://www.nwc.navy.mil/press/Review/1997/winter/art2wi97.htm]. Accessed March 2003.

beneficiaries."[178] This is no small task. The risks, as RAND has stated for the Army, is that that "decisionmakers, pressed by day-to-day demands of beneficiary care, could lose sight of important developments for future needs on the operational side."[179]

Navy Medicine's strategic plan includes three goals to achieve readiness: (1) Optimize the health and fitness of the total force, (2) Minimize casualties through effective prevention and surveillance, and (3) Maximize readiness to deliver effective casualty care anywhere, every time. This third goal is the focus of this research. One of the objectives listed to reach these goals includes the assurance that personnel are trained for their contingency roles. While it is not clear what is meant by "trained for contingency roles," it is interpreted here as receiving the appropriate medical platform indoctrination and training to be functional. If this is the case, there may be a role here for a more "reserve-like" medical force. There are nay-sayers to an increased emphasis on the reserves, and there are valid reasons for their concern. But is it possible that the day-to-day clinical exposure received in civilian medical centers would better prepare specific reserve medical personnel for their readiness roles than the routine of Navy MTFs? This poses yet another question for future research.

As part of its goal of training to requirements, Navy Medicine's Strategic Plan indicates that it will align and train "its military, civilian and contract partners to support the Navy's mission."[180] Readiness requirements generally imply uniformed personnel. If Navy Medicine is to align and train its military personnel and the peacetime workload is the primary source of this training, the workload must support this objective. However, that support may be diminishing.

As pointed out above, there may be opportunities to increase the reserve contribution to this readiness role of Navy Medicine. This would decrease the need for such a large active duty role. This would also imply increased and improved training requirements for operational platforms and improved "call up and readiness" metrics to implement, but might, in the long term, decrease medical expenditures.

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[178] Winkenwerder, W., Carrato, T. *Military Health System: An Overview Statement.* Made to Personnel Subcommittee, Committee on Armed Services, United States Senate. March 2002.

[179] Cecchine, G., Johnson, D., Bondanella J., et al. *Army Medical Strategy: Issues for the Future.* p. 3. Rand Corporation. 2001.

While the dual missions have been the nature of the business of military medicine for many years, the call for transformation has been heard from the highest levels of government. If transformation is to occur with a more narrow focus on wartime readiness, this could be an opportune time to consider a new model. This model would allow military medicine to focus on the readiness mission entirely and to further integrate its peacetime benefit operations with those civilian organizations which focus on the delivery of health care in hospital and community based systems. This more specialized model may provide added benefits to providing improved medical care in the field and costing the taxpayer less. There may come a time and place where the medical benefits provided by the MHS will be cost prohibitive. A new, more narrow approach to a joint operational medical force and the provision of health care to active duty forces would narrow the mission, allow for more specialization, decrease manpower and infrastructure overhead, and provide the singular focus of meeting the combat health support mission.

As stated by the Assistant Secretary of Defense (Health Affairs), the "readiness to provide combat health support to achieve our national military objectives is the heart and soul of our Military Health System."[181] If combat health support is the "heart and soul," then the dual mission is too broad and a more specific and narrowly defined readiness mission must emerge to be the focal point of the MHS.

C. RECOMMENDATIONS

It is apparent that over the last decade a new medical model has emerged. The driver for this new model has been the need to control costs. This is important in our resource constrained environment and particularly so with the prediction of increased costs in the years to come. It could be important for Navy Medicine to have, as part of a comprehensive set of readiness metrics, one which views medical readiness using peacetime workload and staffing as variables. For example, one weakness shown in this study is that we could not identify how many uniformed providers with clinical subspecialties were actually spending time in direct patient care. A system of that would

[180] Navy Medicine's Strategic Plan. November 2002.

[181] Winkenwerder, William. *Medical Readiness.* Message from the Assistant Secretary of Defense (Health Affairs). [http://www.ha.osd.mil/asd/message.html]. Accessed December 2002.

account for the number of Full Time Equivalents (FTEs) of doctors, nurses, and others routinely involved in direct patient care would be helpful in this type of analysis. The newly tested Defense Medical Human Resources System – internet (DMHRi) may be useful in accomplishing this goal. This system aspires to "track and manage human resources" and to "capture and measure human resource utilization across the MHS enterprise."[182]

Additionally, if this type of metric could delineate the type of patient care the provider is involved in, it would be an added benefit to showing the line community, DoD, Congress and others how the work performed is related to, enhances, or adds value to the readiness mission. This would be beneficial to Navy Medicine. This metric could be followed and trended over time, showing the number of doctors, nurses or others involved in direct patient care and analyzing whether the relative workload is increasing, decreasing, or remaining constant. In this way, clinical workload could be viewed much more accurately for each specialty. This study has shown that we cannot determine how many uniformed FTEs are at the point of direct patient care. Although some would say that they are as busy as ever in Navy Medicine, the question is what are they busy doing. Is it administrative workload, patient care workload, etc? A comprehensive metric such as this would help to ferret out some of this useful information. Additionally, it could be used to show others the relevancy of peacetime work to the readiness mission. This will become increasingly important in the years ahead.

That said, it is critically important that the collection of this type of data not increase the administrative workload of the clinicians. It must be built into the organic processes that are already present in the organization. The collection of data many times necessitates increased administrative burdens on the clinicians, encouraging resistance and frustrating clinicians. A system to integrate this form of data and metric collection with minimal impact on the administrative workload would require collaboration and direct input from and cooperation with the various clinical specialties and foresight into the future demands of health care providers.

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[182] Gervais. "The Defense Medical Human Resources System – internet (DMHRSi): Presentation for Navy Medical Manpower Management Conference". [http://www.changearchitect.com/manpower/Presentations.htm]. Accessed March 2003.

In order to make relevant and pertinent changes in an organization, it is important that the proper metrics be utilized to establish a base line. If changes are to be implemented system wide, there needs to be a central reporting structure to input, track and follow these metrics. Metrics require a tools for analysis. This research discovered that there is no systematic central tool or method for the Navy Medicine to track inpatient nursing workload. The tool currently used by some Navy MTFs is the Workload Management System for Nursing, but only a fraction of MTFs use it to provide workload information to NMIMC. Nor is this information being used to aid the organization's efforts at manpower planning for the nursing community. Data from this study and statements from others indicate that continual utilization of specialty skills remains a challenge for the Nurse Corps. A central information technology/decision support system with inpatient nursing workload information may prove beneficial in ensuring that the right person with the right training is meeting the peacetime needs of Navy Medicine. The proposed implementation of the decision support system "Requirements Toolbox" may be the next step in addressing this shortfall.

BIBLIOGRAPHY

1. Assistant Chief for Operational Medicine and Fleet Support (MED –02). *Readiness- 21: A Strategy to Align Navy Medicine Training, and Readiness Platform Training with Fleet and Fleet Marine Force Requirements for the 21st Century.* No Date. [https://bumed.med.navy.mil/med02/Readiness_21.pdf]. Accessed December 2002.

2. Assistant Secretary of Defense for Health Affairs. DoD Instruction 6025.8: *Ambulatory Procedure Visit (APV).* September 1996.

3. Assistant Secretary of Defense for Health Affairs. DoD Directive *6000.12: Health Services Operations and Readiness*. April 1996.

4. Assistant Secretary of Defense for Health Affairs. DoD 6010.13-M: *Medical Expense and Performance Reporting System for Fixed Military Medical and Dental Treatment Facilities.* November 2001.

5. Bacon, R.K. "Medical Expense and Performance Reporting System/Expense Assignment System Brief." May 2002. [http://www.pasba.amedd.army.mil/dqfas/Resources/MEPRSOverview.ppt]. Accessed December 2002.

6. Background Briefing on the Defense Planning Guidance: [http://www.defenselink.news/May2002/t05102002_t0510dpg.html]. Accessed September 2002.

7. Ball, M.J., Beaulieu, D., Douglas, J.V., Ramsaroop, P. *Advancing Federal Sector Health Care: A Model for Technology Transfer.* Springer Publishers, 2001.

8. Barbour, Galen. "The Federal Sector of American Medicine: History & Services, Present and Future." Health Services Administration Web Site. [http://hsa.usuhs.mil/pmo526/slides/526.02.GB.02Fed_Prgms.ppt]. Accessed November 2002.

9. Barrow, Angie. "Medical Department Officer Community Management Brief." [https://bumed.med.navy.mil/med03/SG_Conf_2002/Plenary_Session/Community%20Management.ppt]. Accessed November 2002.

10. Bateman, Lawrence. *Measures of Readiness in Navy Medicine: Problems and Policy Development After the Cold War*. Masters Thesis. Naval Postgraduate School. Monterey, California. September 1999.

11. Benner, Patricia. "The Dreyfus Model of Skill Acquisitions Applied to Nursing" In Evans, N. Lewis, E. deProssse J., editors. *From Novice to Expert, Excellence and Power in Clinical Nursing Practice.* Addison-Wesley Publishers, 1984.

12. Betts, Richard K. *Military Readiness: Concepts, Choices, Consequences.* Harrisonburg, Virginia: The Brookings Institution, 1995.

13. Bilski, T. R. "Steaming to Assist Charlie Papa." Navy Medicine. November-December 2002.

14. Blanck, R. R., Butler, M. L. et al. *Medical Corps Peacetime Issues Affecting Wartime Readiness.* A Group Study. U.S Army War College. Carlisle Barracks, Pennsylvania. May 1986.

15. CancerWEB Project Website. "On-line Medical Dictionary." [http://cancerweb.ncl.ac.uk/omd/index.html]. Accessed December 2002.

16. Carey, N., Grefer, J. "Future Deployable Medical Platforms for Navy Medicine". Navy Medicine. July-August 2002.

17. Carey, N., Horne, G., Rattelman, C. *Combat Casualty Management Issues in Future Operational Environments*. Center for Naval Analysis Annotated Briefing. 1995.

18. Cecchine, G., Hosek, S. D. *Reorganizing the Military Health System: Should There be a Joint Command?* Rand Corporation. 2001.

19. Cecchine, G., Johnson, D., Bondanella J., et al. *Army Medical Strategy: Issues for the Future.* Rand Corporation. 2001.

20. Chairman, Joint Chiefs of Staff. Director for Strategic Plans and Policy, J5: Strategy Division. *Joint Vision 2020.* June 2000.

21. Chairman, Joint Chiefs of Staff. Joint Publication 4-02. *Doctrine for Health Service Support in Joint Operations.* July 2001.

22. Champion, Howard R. "Epidemiology of Combat Death: Historical Perspective Briefing." [http://www.cs.amedd.army.mil/acfi/C6/C6/drchampion_files/frame.htm]. Accessed December 2002.

23. Chief, Bureau of Medicine and Surgery. *Assignment of Medical Department Officer Subspecialty Codes.* BUMEDINST 1214.1. October 1992.

24. Chief, Bureau of Medicine and Surgery. *Assignment of Medical Department Officer Subspecialty Codes.* BUMEDINST 1214.1 Change Transmittal 1. January 2002.

25. Chief, Bureau of Medicine and Surgery. *Medical Augmentation Program.* BUMEDINST 6440.5B. May 2000.

26. Chief, Bureau of Medicine and Surgery. *Tiered Readiness Concept of Operations.* BUMED NOTICE 6440. September 2002.

27. Chief of Naval Operations. *Manual of Navy Officer Manpower and Personnel Classifications.* NAVPERS 15839I. October 2002.

28. Chief of Naval Operations. *Manual of Total Force Manpower Policies and Procedures.* OPNAVINST 1000.16J. January 1998.

29. Chief of Naval Operations. *Navy Total Force Manpower Requirements Handbook*. [http://www.navmac.navy.mil/ReqHdBk.pdf]. Accessed December 2002.

30. Cocrane, R., Morales, M., Wyatt, E. "Naval Force Health Protection: Doctrine for the 21st Century". Navy Medicine. January–February 1999.

31. Congressional Budget Office Study. "The Long-Term Implications of Current Defense Plans." January 2003.

32. Copenhaver, Kimberly. *Navy Health Care Readiness Requirement Model and Programming Costs*. Masters Thesis. Naval Postgraduate School. Monterey, California. December 1994.

33. Coventry, J., et al. *MHSS Workload Primer: Reference Guide to MHSS Workload Measurement Terminology*. Systems Research and Applications (SRA) Corporation. [http://www.tricare.osd.mil/tma/hpae/primword.html]. Accessed December 2002.

34. Cowan, Michael L. "Navy Medicine Responds." Navy Medicine. November-December 2001.

35. Daugird, Allan. "Call RVUs: One Way to Make Call More Equitable." Family Practice Management. June 2002.

36. Davidson, Ellen B. *Restructuring Military Health Care*. Congressional Budget Office Papers. 1995.

37. Department of Defense Report to the President and Congress 2002. [http://www.defenselink.mil/execsec/adr2002/]. Accessed September 2002.

38. Department of Defense TRICARE Management Activity. *Population Health Improvement Plan and Guide.* 2001.

39. Department of Defense Workload Management System for Nursing, Version 4.1, Unit Manual. [https://imcenter.med.navy.mil/wmsn/Manuals/unit41.doc]. Accessed January 2003.

40. Devine, Troy E. *The Influence of America's Casualty Sensitivity on Military Strategy and Doctrine.* School of Advanced Air Power Studies, Air University Thesis. June 1997.

41. Dillman, D.A., Salant, P. *How to Conduct Your Own Survey*. John Wiley & Sons, Inc., 1994.

42. Doyle, Richard. B. "Readiness and Military Health Care After the Cold War". Medical Readiness: Policies and Issues Web Site. [http://www.teleologic.net/IDEA/MR/MR_Home.htm]. Accessed November 2002.

43. Epstein, R.M., Hundert, E.M. "Defining and Assessing Professional Competence." Journal of the American Medical Association. January 2002.

44. Franco, Rich. "MPN 101: Medical Manpower and THCSRR Processes Briefing." [http://www.changearchitect.com/manpower/PlenaryPresentations/THCSRRReadiness.ppt]. Accessed December 2002.

45. Galarneau, M. R., Konoske, P. J., Emens-Hesslink, K. E., Pang, G. *Reducing The Logistical Footprint of Forward Resuscitative Surgical Units Using a Patient Driven Model of Clinical Events.* Naval Health Research Center. March 1998.

46. General Accounting Office Report to Congressional Committees. *Wartime Medical Care: Personnel Requirements Still Not Resolved.* June 1996.

47. General Accounting Office. *Medical Readiness: Efforts Are Underway for DOD Training in Civilian Trauma Centers.* April 1998.

48. Gillert, Douglas J. "Force Protection Covers all Aspects of Troop Health." American Forces Press Service. June 1998.

49. Glossary of MPT Terms. [http://web.nps.navy.mil/~kishore/mpt/glossary.htm]. Accessed December 2002.

50. Horne, Gary E. *TRICARE and Readiness*. Center for Naval Analysis. 1996.

51. Horne, G. E., Carey, N. B., Rattleman, C. R. *Combat Casualty Management Issues in Future Operational Environment – Annotated Briefing.* Center for Naval Analysis. September 1995.

52. Hosek, Susan, Bennett, Bruce, et al. *The Demand for Military Health Care: Supporting Research for a Comprehensive Study of the Military Health Care System.* Rand Corporation. 1995.

53. Ininns, Graham D. *Applying Resource Based Relative Value Scales (RBRVS) to the CHAMPUS Program.* Masters Thesis. Naval Postgraduate School. Monterey, California. December 1990.

54. Kimble, T., Tsui, F. *Operational Medical Manpower: Profiles and Requirement Determination Processes.* Center for Naval Analysis. 2001.

55. Knuth, Thomas E. "The Peacetime Trauma Experience of U.S. Army Surgeons: Another Call for Collaborative Training in Civilian Trauma Centers". Military Medicine. March 1996.

56. Konoske, P., Tropeano, A. "Using Estimating Supplies Program (ESP) to Estimate Medical Resource Requirements." Navy Medicine. September-October 2001.

57. Laffin, John. *Combat Surgeons.* Sutton Publishers. 1999.

58. Leach, David C. "Competence is a Habit." Journal of the American Medical Association. January 2002.

59. Leitch, R. A., Moses, G. R., Magee, H. "Simulation and the Future of Military Medicine," Military Medicine, Vol. 167, April 2002.

60. Levit, K., Smith, C., Cowan, C., et al. "Trends In U.S. Health Care Spending, 2001" Health Affairs, Vol. 21, No. 1. Jan – Feb 2003.

61. McNamara, K.J., Schulman, C., Jepsen, D., Cuffley, J.E. "Establishing a Collaborative Trauma Training Program with a Community Trauma Center for Military Nurses." International Journal of Trauma Nursing. April-June 2001.

62. Medical Corps Specialty Leader Orientation Manual For Active Duty and Reserve Specialty Leaders. [http://www-nehc.med.navy.mil/SPECIAL/PrevMed/Specialty_Leader_Manual.pdf]. Accessed December 2002.

63. Medical Department Strength Briefing, September 2002. [http://www.changearchitect.com/manpower/PlenaryPresentations/StatusofMedicalDepartment.ppt]. Accessed September 2002.

64. Melody, B.T. "Total Health Care Support Readiness Requirements (THCSRR) Update Briefing, September 2002". [http://www.changearchitect.com/manpower/WorkshopPresentations/THCSRRBrief(Melody)4-POMI-SMRC.ppt]. Accessed October 2002.

65. MHS Optimization Plan: Interim Report. February 1999. [http://www.tricare.osd.mil/mhsophsc/mhs_supportcenter/Library/MHS_Optimization_Plan.pdf]. Accessed November 2002.

66. Military Health System Health Care Reengineering Web Site. [http://www.tricare.osd.mil/hcr/downloads/01009.doc]. Accessed December 2002.

67. "Military Medicine in Operations Desert Shield and Desert Storm: The Navy Forward Laboratory, Biological Warfare Detection, and Preventive Medicine." [http://www.gulflink.osd.mil/medical/med_navy.htm]. Accessed December 2002.

68. Musashe, V.W. "M3F Transition Roadmap Briefing". [https://bumed.med.navy.mil/med02/M3F%20TransRdmp%20TMO%20Jun02.ppt]. Accessed February 2002.

69. National Institute of Science and Technology, Advanced Technology Program. *ATP Focused Program: Information Infrastructure for Healthcare.* Advanced Technology Program Web site. [http://www.atp.nist.gov/atp/focus/iifhc.htm]. Accessed February 2002.

70. Naval Medical Information Center's On-Line Health Care Annual Report Web Site. "Glossary". [http://nhso.med.navy.mil/resource/homeport.htm]. Accessed November 2002.

71. Naval Transformation Roadmap: Power and Access…From the Sea. [http://www.mccdc.usmc.mil/pdf_files/Naval_Transformation_Roadmap.pdf]. Accessed September 2002.

72. Need, J. T. *Operational Medicine From The Sea – A Revolution in Medical Affairs*. Naval War College. Newport, Rhode Island. June 1997.

73. Needleman, J., Buerhaus, P., et al. "Nurse-Staffing Levels and the Quality of Care in Hospitals." New England Journal of Medicine. May 2002.

74. Office of the Inspector General, Department of Defense. *Audit Report*: *Military Health System Optimization Plan*. December 2001.

75. Office of the Secretary of Defense. *Quadrennial Defense Review Report*. September 2001.

76. Office of the Secretary of Defense for Operations and Maintenance. *FY 2003 Budget Estimates.* February 2002.

77. Office of the Under Secretary of Defense for Personnel and Readiness (ODUSD). *Defense Manpower Requirements Report 2001*, May 2000.

78. Ochener, M.G., Harviel, J.D., Stafford, P.W., et al. "Development and Organization for Casualty Management on a 1,000-bed Hospital Ship in the Persian Gulf." Journal of Trauma. April 1992.

79. Olsen, J. C. "Are We Dancing Alone? Matching Medical Operational Readiness Training with Potential Future Conflict." Military Medicine, Vol. 162, February 1997.

80. Rattelman, C. *Combat Casualty Management Issues in Future Operational Environments*. Center for Naval Analysis Annotated Briefing. 1995.

81. Rattleman, C., Levy, R., Carey N., Tsui, F. *Wartime Medical Requirements: Profiles and Requirement Determination Processes.* Center for Naval Analysis. October 2001.

82. Robbins, A.S., Moilanen, D.A., Foncseca, V.P., Chao, S.Y. "Recent trends in Workload, Input Costs, and Expenditures in the Air Force Medical Service Direct Care System." Military Medicine, Vol. 167, April 2002.

83. Ryan, Doris., "Providing Medical Care on the 21st Century Battlefield". Navy Medicine. July- August 2001.

84. Sarmiento, Jeanne. *Pediatric Outpatient Clinic Manpower Requirement Variables at Navy Medical Treatment Facilities.* Masters Thesis. Naval Postgraduate School. Monterey, California. June 2000.

85. Savitsky, M.S., LeDonne, D.M. "Maximizing the Mission of Medical Readiness in a Joint Environment: A Systems Model." Navy Medicine, May-June 1995.

86. Section 733 Update: Report of the Working Group on Sustainment Base and Training. [http://www.economics.osd.mil/Report_DHP_.pdf]. Accessed September 2002.

87. Singer, N. M. CBO Testimony before the Subcommittee on Military Personnel Committee on National Security, U.S. House of Representatives on the *Wartime Mission of the Military Medical System.* March 1995.

88. Smith, A. M. "Joint Medical Support: Are We Asleep at the Switch?" Joint Forces Quarterly. Summer 1995.

89. Smith, A. M., Hazen, S. J. "What Makes War Surgery Different?" Military Medicine. January 1991.

90. Smith, A. M., Petersen, H.V. "Matching Fleet Medical Readiness to the New Naval Strategy." Naval War College Review, Winter 1997. [http://www.nwc.navy.mil/press/Review/1997/winter/art2wi97.htm]. Accessed March 2003.

91. Southby, H.V. "NHCP Surgeons Get Level I Trauma Access". Navy Medicine. January – February 1999.

92. Standard Ambulatory Data Record (SADR) Frequently Asked Questions web site. [https://131.158.50.247/reconcile/FAQ/DQSADRFAQ.htm - q2]. Accessed January 2003.

93. Standard Inpatient Data Record (SIDR) Frequently Ask Questions web site. [https://131.158.50.247/reconcile/FAQ/DQSIDRFAQ.htm]. Accessed December 2002.

94. *The National Security Strategy of the United States of America*. September 2002.

95. Tsui, F., Kimble, T. *Operational Medical Manpower: Profiles and Requirement Determination Processes.* Center for Naval Analysis. February 2001.

96. U.S. Department of Defense Office of Program Analysis and Evaluation. *The Economics of Sizing the Military Medical Establishment: Executive Report of the Comprehensive Study of the Military Medical Care System.* April, *1994.*

97. Wagner, Eric R. "An Overview of Managed Health Care," *In The Managed Care Handbook*, edited by Peter R. Kongstvedt, M.D., Gaithersburg, Maryland: Aspen Publications, Inc., July 1996.

98. Washington Headquarters Services Directorate for Information Operations and Reports. *Selected Manpower Statistics.* [http://web1.whs.osd.mil/mmid/m01/fy00/m01fy00.pdf]. Accessed January 2003.

99. Weber, Timothy H. "The THCSRR Model – Determining Navy Medicine's Readiness Manpower Requirements." Navy Medicine. September – October 1994.

100. Winkenwerder, William. *Medical Readiness.* Message from the Assistant Secretary of Defense (Health Affairs). [http://www.ha.osd.mil/asd/message.html]. Accessed December 2002.

101. Winkenwerder, William. *Military Health System Definition of Quality in Health Care.* Memorandum to Surgeon Generals. 2002.

102. Winkenwerder, William. "Vision and Priorities for the Military Health System". [http://www.ha.osd.mil/All%20Hands%20Dr%20W%20Brief%20(Oct%2018%2002).%20No%20Notes.ppt]. Accessed October 2002.

103. Winkenwerder, W., Carrato, T. *Military Health System: An Overview Statement.* Made to Personnel Subcommittee, Committee on Armed Services, United States Senate. March 2002.

104. World Wide Report (WWR) Frequently Asked Questions Web Site. [https://131.158.50.247/reconcile/FAQ/DQWWRFAQ.htm]. Accessed December 2002.

105. Writer, James, DeFraites, Robert, et al. *Comparative Mortality Among U.S. Military Personnel in the Persian Gulf Region and Worldwide During Operations Desert Shield and Desert Storm.* Journal of the American Medical Association. January 1996.

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APPENDIX A

MEDICAL EXPENSE AND PERFORMANCE REPORTING SYSTEM CODES AND DESCRIPTIONS (Source: M2 Data Dictionary)

MEPRS Codes	DESCRIPTION	MEPRS Codes	DESCRIPTION
AA	Medical Care	AC	Obstetrical and Gynecological Care
AAA	Internal Medicine	ACA	Gynecology
AAB	Cardiology	ACB	Obstetrics
AAC	Coronary Care Unit	ACX	OB/GYN Care Cost Pool
AAD	Dermatology	ACZ	OB/GYN NEC
AAE	Endocrinology	ADA	Pediatrics
AAF	Gastroenterology	ADB	Newborn Nursery
AAG	Hematology	ADC	Neonatal ICU
AAH	Medical ICU	ADD	Adolescent Pediatrics
AAI	Nephrology	ADE	Pediatric ICU
AAJ	Neurology	ADX	Pediatric Care Cost Pool
AAK	Oncology	ADZ	Pediatric Care NEC
AAL	Pulmo/Resp Disease	AE	Orthopedic Care
AAM	Rheumatology	AEA	Orthopedics
AAN	Physical Medicine	AEB	Podiatry
AAO	Clinical Immunology	AEC	Hand Surgery
AAP	HIV III - AIDS	AEX	Orthopedic Care Cost Pool
AAQ	Bone Marrow Transplant	AEZ	Orthopedic Care NEC
AAR	Infectious Disease	AF	Psychiatric Care
AAS	Allergy	AFA	Psychiatrics
AAX	Medical Care Cost Pool	AFB	Substance Abuse Rehab
AAZ	Medical Care NEC	AFX	Psychiatric Care Cost Pool
AB	Surgical Care	AFZ	Psychiatric Care NEC
ABA	General Surgery	AG	Family Practice Care
ABB	Cardio/Thoracic Surgery	AGA	Family Practice Medicine
ABC	Surgical ICU	AGB	Family Practice Surgery
ABD	Neurosurgery	AGC	Family Practice Obstetrics
ABE	Ophthalmology	AGD	Family Practice Pediatrics
ABF	Oral Surgery	AGE	Family Practice Gynecology
ABG	Otolaryngology	AGF	Family Practice Psychiatry
ABH	Pediatric Surgery	AGG	Family Practice Orthopedics
ABI	Plastic Surgery	AGH	Family Practice Newborn Nursery

MEPRS Codes	DESCRIPTION	MEPRS Codes	DESCRIPTION
ABJ	Proctology	AGX	Family Practice Cost Pool
ABK	Urology	AGZ	Family Practice Care NEC
ABL	Organ Transplant	BA	Medical Care
ABM	Burn Unit	BAA	Internal Medicine Clinic
ABN	Peripheral Vascular Surgery	BAB	Allergy Clinic
ABP	Head and Neck Surgery	BAC	Cardiology Clinic
ABQ	Vascular & Interventional	BAE	Diabetic Clinic
ABX	Surgical Care Cost Pool	BAF	Endocrinology Clinic
ABZ	Surgical Care NEC	BEB	Cast Clinic
BAG	Gastroenterology Clinic	BEC	Hand Surgery Clinic
BAH	Hematology Clinic	BEE	Orthotic Laboratory
BAI	Hypertension Clinic	BEF	Podiatry Clinic
BAJ	Nephrology Clinic	BEX	Orthopedic Care Cost Pool
BAK	Neurology Clinic	BEZ	Orthopedic Care NEC
BAL	Nutrition Clinic	BF	Psychiatric and Mental Health Care
BAM	Oncology Clinic	BFA	Psychiatric Clinic
BAN	Pulmonary Disease Clinic	BFB	Psychology Clinic
BAO	Rheumatology Clinic	BFC	Child Guidance Clinic
BAP	Dermatology Clinic	BFD	Mental Health Clinic
BAQ	Infectious Disease Clinic	BFE	Social Work Clinic
BAR	Physical Medicine Clinic	BFF	Substance Abuse Rehab Clinic
BAS	Radiation Therapy Clinic	BFX	Psychiatric and Mental Health Cost
BAT	Bone Marrow Transplant Clinic	BFZ	Psychiatric Clinics NEC
BAU	Genetic Clinic	BG	Family Practice Care
BAX	Medical Clinics Cost Pool	BGA	Family Practice Clinic
BAZ	Medical Care NEC	BGX	Family Practice Cost Pool
BB	Surgical Care	BGZ	Family Practice NEC
BBA	General Surgery Clinic	BH	Primary Medical Care
BBB	Cardio/Thoracic Surgery Clinic	BHA	Primary Care Clinics
BBC	Neurosurgery Clinic	BHB	Medical Examination Clinic
BBD	Ophthalmology Clinic	BHC	Optometry Clinic
BBE	Organ Transplant Clinic	BHD	Audiology Clinic
BBF	Otolaryngology Clinic	BHE	Speech Pathology Clinic
BBG	Plastic Surgery Clinic	BHF	Community Health Clinic
BBH	Proctology Clinic	BHG	Occupational Health Clinic
BBI	Urology Clinic	BHH	TRICARE Outpatient Clinics
BBJ	Pediatric Surgery Clinic	BHI	Immediate Care Clinic
BBK	Peripheral Vascular Surgery Clinic	BHX	Cost Pool

MEPRS Codes	DESCRIPTION	MEPRS Codes	DESCRIPTION
BBL	Pain Management Clinic	BHZ	Primary Medical Care Clinics NEC
BBM	Vascular & Interventional	BI	Emergency Medical Care
BBX	Surgical Clinics Cost Pool	BIA	Emergency Medical Clinic
BBZ	Surgical Care NEC	BIX	Emergency Medical Cost Pool
BC	Obstetrical and Gynecological	BIZ	Emergency Medical Care NEC
BCA	Family Planning Clinic	BJ	Flight Medicine Care
BCB	Gynecology Clinic	BJA	Flight Medicine Clinic
BCC	Obstetrics Clinic	BJX	Flight Medicine Cost Pool
BCX	OB/GYN Clinics Cost Pool	BJZ	Flight Medicine NEC
BCZ	OB/GYN Care NEC	BK	Undersea Medicine Care
BD	Pediatrics Care	BKA	Undersea Medicine Clinic
BDA	Pediatrics Clinics	BKX	Undersea Medicine Clinic Cost
BDB	Adolescent Clinic	BKZ	Undersea Medicine NEC
BDC	Well Baby Clinic	BL	Rehabilitative Ambulatory
BDX	Pediatric Clinics Cost Pool	BLA	Physical Therapy Clinic
BDZ	Pediatric Care NEC	BLB	Occupation Therapy Clinic
BE	Pediatrics Care	BLX	Rehabilitative Ambulatory
BEA	Orthopedic Clinic	BLZ	Rehabilitative Ambulatory
		CA	Dental Services
CAZ	Dental Services NEC	CAA	Dental Care
CB	Dental Prosthetic	CAX	Dental Care Cost Pool
CBA	Dental Laboratory	DI	Nuclear Medicine Care
CBX	Dental Laboratory Cost Pool	DIA	Nuclear Medicine
CBZ	Dental Prosthetics NEC	DIX	Nuclear Medicine Cost Pool
DA	Pharmacy Services	DIZ	Nuclear Medicine NEC
DAA	Pharmacy	DJ	Intensive Care
DAX	Pharmacy Cost Pool	DJA	Medical ICU
DAZ	Pharmacy NEC	DJB	Surgical ICU
DB	Pathology	DJC	Coronary Care Unit
DBA	Clinical Pathology	DJD	Neonatal ICU
DBB	Anatomical Pathology	DJE	Pediatric ICU
DBD	Cytogenetic Lab (AF & N Only)	DJX	Command, Mgmt, and Admin Cost
DBE	Molecular Genetic Lab (AF & N	DJZ	ICU NED
DBF	Biochemical Genetic Lab (AF & N	EA	Depreciation
DBX	Pathology Cost Pool	EAA	Inpatient Depreciation
DBZ	Pathology NEC	EAB	Ambulatory Depreciation
DCA	Diagnostic Radiology	EAC	Dental Depreciation
DCX	Diagnostic Radiology Cost Pool	EAD	Special Programs Depreciation

MEPRS Codes	DESCRIPTION	MEPRS Codes	DESCRIPTION
DCZ	Radiology NEC	EAE	Medical Readiness Depreciation
DD	Special Procedures Services	EAZ	Depreciation NEC
DDA	Electrocardiography	EB	Command, Mgmt, and Admin
DDB	Electroencephalography	EBA	Command
DDC	Electroneuromyography	EBB	Special Staff
DDD	Pulmonary Function	EBC	Administration
DDE	Cardiac Catheterization	EBD	Clinical Management
DDX	Special Procedures Services Cost	EBE	Graduate Medical Education
DDZ	Special Procedures Svcs NEC	EBF	Education/Training Program
DE	Central Sterile Supply and	EBG	Peacetime Exercise/Disaster
DEA	Central Sterile Supply	EBH	Third Party Collection
DEB	Central Material Service	EBI	Graduate Dental Education Support
DEX	Central Sterile Supply and	EBX	Command, Mgmt, and Admin Cost
DEZ	Central Services NEC	EBZ	Command, Mgmt, and Admin
DF	Surgical Services	ED	Support Services
DFA	Anesthesiology	EDA	Plant Management -
DFB	Surgical Suite	EDB	Operation of Utilities -
DFC	Post-Anesthesia Care Unit	EDC	Maintenance of Real Property -
DFX	Surgical Services Cost Pool	EDD	Minor Construction -
DFZ	Surgical Services NEC	EDE	Other Engineering Support -
DG	Same Day Services	EDF	Lease of Real Property -
DGA	Same Day Services	EDG	Transportation -
DGB	Hemodialysis	EDH	Fire Protection -
DGD	Peritoneal Dialysis	EDI	Police Protection -
DGE	Ambulatory Nursing Services	EDJ	Communications -
DGX	Same Day Services Cost Pool	EDK	Other MTF Support Svcs -
DGZ	Ambulatory Procedures Visits	EDX	Supt Svcs - Funded/Reimbursable
DH	Rehabilitative Services	EE	Material Services
DHA	Inhalation/Respiratory Therapy	EEA	Material Services
DHX	Rehabilitative Services Cost Pool	EEX	Material Svcs Cost Pool
DHZ	Rehabilitative Services NEC	EEZ	Material Svcs NEC
EFX	Housekeeping Cost Pool	EF	Housekeeping
EFZ	Housekeeping NEC	EFA	Housekeeping
EG	Biomedical Equip Repair	FBF	Epidemiology Program
EGA	Biomedical Equip Repair	FBI	Immunizations
EGX	Biomedical Equip Cost Pool	FBJ	Early Intervention Services (EIS)
EGZ	Biomedical Equip Repair NEC	FBK	Medically Related Services (MRS)
EH	Laundry Service	FBL	Multi-Disciplinary Team Services

MEPRS Codes	DESCRIPTION	MEPRS Codes	DESCRIPTION
EHA	Laundry Service	FBN	Hearing Conservation Program
EHX	Laundry Service Cost Pool	FBX	Public Health Svcs Cost Pool
EHZ	Laundry Service NEC	FBZ	Public Health Svcs NEC
EI	Nutrition Management	FC	Health Care Svcs Supt
EIA	Patient Food Operations	FCA	Purchased or Referred Care
EIB	Combined Food Operations	FCB	Guest Lecturer & Consultant
EIC	Inpatient Clinical Nutrition	FCC	CHAMPUS Beneficiary Support
EIX	Nutrition Management Cost pools	FCD	Support to Other Military
EIZ	Nutrition Management NEC	FCE	Support to Other Federal Agencies
EJ	Inpatient Affairs	FCF	Support to Non-Federal Activities
EJA	Inpatient Affairs	FCG	Support to Non-MEPRS Reporting
EJX	Inpatient Affairs Cost Pool	FCH	OCONUS Emergency and Activity
EJZ	Inpatient Care Administration	FCZ	Health Care Svcs Supt NEC
EK	Ambulatory Care Administration	FD	Military-Unique Medical Activities
EKA	Ambulatory Care Administration	FDB	Base Operations- Medical
EKX	Ambulatory Care Admin Cost Pool	FDC	Non-patient Food Operations
EKZ	Ambulatory Care Administration	FDD	Decedent Affairs
EL	TRICARE and Managed Care	FDE	Initial Outfitting
ELA	TRICARE and Managed Care	FDF	Urgent Minor Construction
ELX	Cost Pool	FDG	TDY/TAD Enroute to PCS
ELZ	TRICARE and Managed Care	FDH	Military Funded Emergency
FA	Specified Health Related Programs	FDI	In-place Consecutive Overseas
FAA	Area Reference Laboratories	FDX	Cost Pools
FAB	Area Dental Prosthetic Lab	FDZ	Military Unique Med Activity
FAC	Ophthalmic Fabrication and Repair	FE	Patient Movement and Military
FAD	DoD Military Blood Program	FEA	Patient Transportation
FAF	Drug Screening and Testing	FEB	Patient Movement Expenses
FAH	Clinical Investigation Program	FEC	Transient Patient Care
FAI	Physiological Trng/Support	FED	Military Patients Personnel
FAK	Student Expenses	FEF	Aeromedical Staging Facilities
FAL	Continuing Health Education	FEX	Patient Movement/Admin Cost
FAM	GME Intern/Resident Expenses	FEZ	Patient Movement/Mil Patient
FAN	GDE Intern/Resident Expenses	FF	Veterinary Services
FAO	GME Fellowship/Resident	FFA	Dep Commander for Veterinary
FAP	GME Fellowship Expenses	FFB	Commissary Food Inspection
FAQ	GDE Fellowship Expenses	FFC	Troop Issues Supply Food
FAX	Specified Health-Related Prog	FFD	Supply Point Food Inspection
FAZ	Specified Health-Related Prog	FFE	Depot Food Inspection

MEPRS Codes	DESCRIPTION	MEPRS Codes	DESCRIPTION
FB	Public Health Services	FFF	Origin Food Inspection
FBB	Preventive Medicine	FFG	Veterinary Laboratory
FBC	Industrial Hygiene Program	FFH	Animal Dz Prevention & Ctrl
FBD	Radiation Health Program	FFX	Veterinary Svcs Cost Pool
FBE	Environmental Health Program	FFZ	Veterinary Svcs NEC
GAB	Other Readiness Planning &	GA	Deployment Planning &
GB	Readiness Exercises	GAA	Deployment Planning &
GBA	Field or Fleet Readiness Exercises	GE	Readiness Logistics Management
GD	Unit or Personnel Deployments	GEA	Prepositioned War Reserve
GDA	Unit or Personnel Deployments	GEB	Contingency Patient Care Areas
GEC	Contingency Blocks/Packs		
GF	Readiness Physical Training		
GFA	Readiness Physical Training		
GG	National Disaster Medical System		
GGA	NDMS Planning & Administration		
GGB	NDMS Exercises		

APPENDIX B

TAB 2A

SUMMARY DATA FOR ALL FACILITIES BY HEALTHCARE SUPPORT OFFICE
NAVY HEALTH CARE ANNUAL REPORT
CORE HOSPITAL DATA FOR: 2000

HSO Facility	Catchment Population	OPV	OP Beds	EXP Beds	ADM	ALOS	ADPL	TOTAL IP & OP DIAGNOSTIC TREATMENTS Lab Tests	X Rays	Pharm
JACKSONVILLE FL										
NH BEAUFORT	33,084	108,624	8	33	906	3.3	8	301,214	29,234	395,939
NH CHARLESTON	63,371	109,172		32				208,935	52,930	304,091
NH CORPUS CHRISTI		90,542						180,762	25,045	388,938
NH GUANTANAMO BAY	1,734	24,493	2	11	218	2.1	1	27,351	2,899	32,709
NH JACKSONVILLE	132,555	334,671	50	93	4,492	2.7	27	675,949	141,426	1,509,573
NH KEFLAVIK	3,628	33,292	2	13	336	1.8	1	44,663	3,524	40,266
NH NAPLES	8,782	48,575	7	26	838	2.3	4	138,580	16,090	105,903
NH PENSACOLA	74,207	223,214	35	101	3,250	2.7	20	684,959	83,898	1,293,801
NH ROOSEVELT ROADS-CEIBA	24,639	69,698	8	50	811	2.6	5	112,444	18,195	124,034
NH ROTA	5,815	67,501	9	32	876	2.4	5	584,267	48,741	111,594
NH SIGONELLA	5,347	58,577	5	17	619	2.4	3	98,589	10,732	81,188
TRIDENT REGIONAL MEDICAL CTR					1,610	2.7	10			
HSO TOTAL:	353,162	1,168,359	126	408	13,956	2.5	8	3,057,713	432,714	4,388,036
NORFOLK VA										
NEWPORT HOSPITAL (CIVILIAN)		575			822	2.9	6			
NH CAMP LEJEUNE	90,824	325,529	50	180	5,933	2.5	31	599,636	59,252	715,645
NH CHERRY POINT	35,524	141,120	15	23	1,292	2.3	5	193,304	15,168	303,736
NH GREAT LAKES	65,907	167,011	35	131	1,351	6.2	23	1,004,862	78,060	776,739
NMC PORTSMOUTH	289,374	783,059	200	480	19,644	3.6	161	2,426,722	486,416	3,272,778
NNMC BETHESDA	98,419	491,231	135	419	9,666	4.4	96	1,861,309	256,578	1,658,750
HSO TOTAL:	580,048	1,908,525	435	1,233	38,708	3.7	54	6,085,833	895,474	6,727,648
SAN DIEGO CA										
NH BREMERTON	53,780	223,071	30	104	3,277	2.3	17	540,381	52,578	553,186
NH CAMP PENDLETON	128,097	343,702	55	150	5,797	2.6	30	840,389	118,011	833,754
NH GUAM-AGANA	17,343	85,936	25	266	2,260	3.0	16	219,388	37,851	250,792
NH LEMOORE	25,247	116,357	5	29	780	2.3	3	147,319	26,713	256,315
NH OAK HARBOR	28,807	125,156	8	25	1,440	1.9	5	123,700	18,200	236,767
NH OKINAWA	41,815	157,987	55	266	4,569	3.1	28	322,197	75,671	380,356
NH TWENTYNINE PALMS	23,499	113,698	15	39	1,498	2.1	7	153,475	74,375	195,048
NH YOKOSUKA	24,632	110,418	25	166	2,255	2.8	14	320,407	40,293	298,478
NMC SAN DIEGO	253,544	760,945	245	539	20,855	3.4	159	2,844,404	466,093	2,682,677
HSO TOTAL:	596,764	2,037,270	463	1,584	42,731	2.6	31	5,511,660	909,785	5,687,373
GRAND TOTAL	1,529,974	5,114,154	1,024	3,22	95,395	2.8	27	14,655,20	2,237,973	16,803,057

TAB 2B

SUMMARY DATA FOR ALL FACILITIES BY HEALTHCARE SUPPORT OFFICE
NAVY HEALTH CARE ANNUAL REPORT
CORE HOSPITAL DATA FOR: 2000

HSO FACILITY	TOTAL STAFF (Onboard) Officers	Enlisted	Civilians	Contractors	LABOR ADJUSTMENTS (FTE) Non Available	Readiness	Borrowed	OTH
JACKSONVILLE FL								
NH BEAUFORT	35	97	172	39.5	687.6			
NH CHARLESTON	71	153	242	16.5	1,050.9			6.3
NH CORPUS CHRISTI	22	56	84	8.5	683.6	20.7	326.8	
NH GUANTANAMO BAY	58	124	71	35.0	242.8			
NH JACKSONVILLE	82	208	518	136.0	4,155.2	46.9	280.0	3.0
NH KEFLAVIK	44	71	22	0.0	149.4			4.0
NH NAPLES	101	215	103	22.0	575.2	2.8	4.8	
NH PENSACOLA	59	111	313	90.0	1,725.2	7.3	312.5	
NH ROOSEVELT ROADS CEIBA	104	231	111	230.0	1,361.1		36.8	
NH ROTA	102	195	29	4.0	376.1	0.6	2.6	9.0
NH SIGONELLA	79	161	76	91.4	328.3		44.6	
HSO TOTAL:	757	1,622	1,741	672.9	11,335.3	78.2	1,008.0	22.3
NORFOLK VA								
NH CAMP LEJEUNE	49	140	365	150.4	2,166.4		1,790.5	9.1
NH CHERRY POINT	26	30	119	46.5	512.9	14.3	1.9	2.1
NH GREAT LAKES	178	526	302	20.0	1,906.9	4.9	372.2	
NMC PORTSMOUTH	279	639	1,279	244.0	3,165.5	17.0	292.9	12.0
NNMC BETHESDA	290	327	1,018	229.0	2,813.6	379.8	681.1	3.0
HSO TOTAL:	822	1,662	3,083	689.9	10,565.4	416.0	3,138.5	26.2
SAN DIEGO CA								
NH BREMERTON	42	69	361	323.0	1,692.6	24.0	91.8	5.0
NH CAMP PENDLETON	71	145	424	162.0	1,561.4		776.0	6.0
NH GUAM-AGANA	168	363	104	2.0	707.2		6,501.8	
NH LEMOORE	20	22	101	35.5	481.8	2.1	93.8	3.1
NH OAK HARBOR	61	110	87	72.8	508.9	5.0	556.6	13.0
NH OKINAWA	192	461	128	707.0	236.0			
NH SUBIC BAY	34	41	0	0.0				
NH TWENTYNINE PALMS	115	191	13	18.6	948.4	2.1	31.0	14.0
NH YOKOSUKA	156	289	8	14.0	1,309.1		150.9	7.0
NMC SAN DIEGO	351	375	1,17	614.5	3,083.9	225.7	711.3	48.1
HSO TOTAL:	1,210	2,066	2,60	1,949.4	10,529.3	258.8	8,913.2	96
GRAND TOTAL	2,789	5,350	7,43	3,312.2	32,430.0	753.0	13,059.7	

TAB 2D

SUMMARY DATA FOR ALL FACILITIES BY HEALTHCARE SUPPORT OFFICE
NAVY HEALTH CARE ANNUAL REPORT
CORE HOSPITAL USN/USMC CATCHMENT AREA CHAMPUS SUMMARY FOR: 2000

HSO FACILITY	CHAMPUS INPATIENT CHARGES -- ADMS	GOVERNMENT	PATIENT	TOTAL	CHAMPUS OUTPATIENT CHARGES ----- VISITS	GOVERNMENT	PATIENT	TOTAL
JACKSONVILLE FL								
NH BEAUFORT	1,256	$2,979,466	$270,893	$3,250,359	32,431	$4,346,470	$1,157,474	$5,503,944
NH CHARLESTON	2,872	$8,890,916	$1,069,002	$9,959,918	118,630	$15,517,777	$6,546,586	$22,064,363
NH CORPUS CHRISTI	0	$0	$0	$0	2	$1,906	$228	$2,134
NH JACKSONVILLE	2,705	$11,662,499	$2,266,919	$13,929,418	365,198	$36,713,682	$9,483,421	$46,197,103
NH PENSACOLA	1,069	$4,019,360	$1,262,453	$5,281,813	154,931	$17,279,894	$7,215,196	$24,495,090
NH ROOSEVELT ROADS-CEIBA	55	$115,786	$13,295	$129,081	2,167	$211,968	$25,723	$237,691
HSO TOTAL:	7,957	$27,668,027	$4,882,562	$32,550,589	673,359	$74,071,697	$24,428,628	$98,500,325
NORFOLK VA								
NH CAMP LEJEUNE	2,564	$10,441,041	$1,126,474	$11,567,515	116,435	$12,718,339	$3,569,340	$16,287,679
NH CHERRY POINT	1,019	$4,866,497	$1,104,939	$5,971,436	55,915	$7,204,217	$2,445,127	$9,649,344
NH GREAT LAKES	1,424	$5,135,021	$494,671	$5,629,692	42,179	$6,702,019	$2,012,146	$8,714,165
NMC PORTSMOUTH	3,434	$13,489,403	$2,472,459	$15,961,862	609,637	$56,043,226	$22,597,381	$78,640,607
NNMC BETHESDA	730	$4,474,104	$549,315	$5,023,419	90,178	$10,064,336	$4,369,672	$14,434,008
HSO TOTAL:	9,171	$38,406,066	$5,747,858	$44,153,924	914,344	$92,732,137	$34,993,666	$127,725,803
SAN DIEGO CA								
NH BREMERTON	354	$2,515,145	$160,112	$2,675,257	59,952	$5,212,100	$1,689,546	$6,901,646
NH CAMP PENDLETON	1,307	$8,198,339	$429,365	$8,627,704	176,866	$18,043,362	$3,819,280	$21,862,642
NH LEMOORE	577	$3,102,490	$170,963	$3,273,453	38,860	$5,023,396	$1,324,132	$6,347,528
NH OAK HARBOR	322	$1,886,571	$131,923	$2,018,494	33,102	$4,619,263	$1,158,147	$5,777,410
NH TWENTYNINE PALMS	392	$5,996,861	$129,221	$6,126,082	30,914	$3,973,405	$562,598	$4,536,003
NMC SAN DIEGO	1,282	$11,963,269	$851,235	$12,814,504	308,715	$29,376,347	$7,275,821	$36,652,168
HSO TOTAL:	4,234	$33,662,675	$1,872,819	$35,535,494	648,409	$66,247,873	$15,829,524	$82,077,397
GRAND TOTAL:	21,362	$99,736,761	$12,503,239	$112,240,007	2,236,112	$233,051,707	$75,251,818	$308,303,525

TAB 2E

SUMMARY DATA FOR ALL FACILITIES BY HEALTHCARE SUPPORT OFFICE
NAVY HEALTH CARE ANNUAL REPORT
CORE HOSPITAL NON-NAVY AREA SUMMARY FOR: 2000

HSO FACILITY	--- VA BEDS --- ACUTE CARE	LONG TERM	---------- CIVILIAN ---------- NUMBER OF OP BEDS	NUMBER OF HOSPITALS	NUMBER OF PHYSICIANS	MED SHOOLS
JACKSONVILLE FL						
NH BEAUFORT	0	0	331	4		0
NH CHARLESTON	161	0	2,197	11		1
NH CORPUS CHRISTI	1,745	143	1,888	9		0
NH JACKSONVILLE	0	0	2,986	14		0
NH PENSACOLA	0	0	2,102	9		0
HSO TOTAL:	1,906	143	9,504	47		1
NORFOLK VA						
NH CAMP LEJEUNE	0	0	858	6		0
NH CHERRY POINT	0	0	0	0		0
NH GREAT LAKES	1,755	613	23,134	95		6
NMC PORTSMOUTH	847	210	6,473	23		1
NNMC BETHESDA	1,113	307	20,786	78		5
HSO TOTAL:	3,715	1,130	51,251	202		12
SAN DIEGO CA						
NH BREMERTON	425	132	7,418	32		1
NH CAMP PENDLETON	0	0	1,778	11		1
NH LEMOORE	145	60	2,440	16		0
NH OAK HARBOR	0	0	753	6		0
NH TWENTYNINE PALMS	0	0	922	5		0
NMC SAN DIEGO	163	69	6,172	27		1
HSO TOTAL:	733	261	19,483	97		3
GRAND TOTAL:	6,354	1,534	80,238	346		16

TAB 3A

NAVY HEALTH CARE ANNUAL REPORT

CORE HOSPITAL PRODUCTION RATIOS BY HEALTHCARE SUPPORT OFFICE FOR. 2000

HSO FACILITY	CATCHMENT POP	OPV*	OP BEDS	ADM	ADPL	PHY	RN	LPN & TECH**	PHY/ 1000	OPV/ 1000	ADM/ 1000	OPV /PHY	ADM /PHY	ADPL /PHY	RN/ PHY	RN/ BED	L&T/ BED
JACKSONVILLE FL																	
NH BEAUFORT	33,084	108,624	8	906	8	21	37	106	0.6	3,283.3	27.4	5,172.6	43.1	0.4	1.7	4.6	13
NH CHARLESTON	63,371	109,172				32	36	160	0.5	1,722.7		3,411.6			1.1	0.0	0
NH CORPUS CHRISTI		90,542				9	12	49				10,060.2			1.3	0.0	0
NH GUANTANAMO BAY	1,734	24,493	2	218	1	33	45	123	19.0	14,125.1	125.7	742.2	6.6	0.0	1.4	****	61
NH JACKSONVILLE	132,555	334,671	50	4,492	27	27	120	290	0.2	2,524.8	33.9	12,629.1	169.5	1.0	4.5	2.4	5
NH KEFLAVIK	3,628	33,292	2	336	1	12	18	72	3.3	9,176.4	92.6	2,774.3	28.0	0.1	1.5	9.0	36
NH NAPLES	8,782	48,575	7	838	4	28	58	204	3.2	5,531.2	95.4	1,734.8	29.9	0.1	2.1	8.3	29
NH PENSACOLA	74,207	223,214	35	3,250	20	23	46	125	0.3	3,008.0	43.8	9,705.0	141.3	0.9	2.0	1.3	3
NH ROOSEVELT ROADS-CEIBA	24,639	69,698	8	811	5	63	102	338	2.6	2,828.8	32.9	1,106.3	12.9	0.1	1.6	****	42
NH ROTA	5,815	67,501	9	876	5	26	51	187	4.5	11,608.1	150.6	2,596.2	33.7	0.2	2.0	5.7	20
NH SIGONELLA	5,347	58,577	5	619	3	37	100	155	7.0	10,955.1	115.8	1,570.4	16.6	0.1	2.7	****	31
TRIDENT REGIONAL MEDICAL CTR				1,610	10												
HSO TOTAL:	353,162	1,168,359	126	13,956	8	311	624	1,809	4.1	6,476.3	79.8	4,682.1	53.5	0.3	2.0	7.9	22
NORFOLK VA																	
NEWPORT HOSPITAL (CIVILIAN)		575		822	6												
NH CAMP LEJEUNE	90,824	325,529	50	5,933	31	52	87	213	0.6	3,584.2	65.3	6,272.2	114.3	0.6	1.7	1.7	4
NH CHERRY POINT	35,524	141,120	15	1,292	5	15	41	55	0.4	3,972.5	36.4	9,471.1	86.7	0.3	2.7	2.7	3
NH GREAT LAKES	65,907	167,011	35	1,351	23	85	94	488	1.3	2,534.0	20.5	1,964.8	15.9	0.3	1.1	2.7	13
NMC PORTSMOUTH	289,374	783,059	200	19,644	161	145	426	830	0.5	2,706.0	67.9	5,400.4	135.5	1.1	2.9	2.1	4
NNMC BETHESDA	98,419	491,231	135	9,666	96	157	359	403	1.6	4,991.2	98.2	3,128.9	61.6	0.6	2.3	2.7	3
HSO TOTAL:	580,048	1,908,525	435	38,708	54	454	1,006	1,989	0.9	3,557.6	57.7	5,247.5	82.8	0.6	2.1	2.4	5
SAN DIEGO CA																	
NH BREMERTON	53,780	223,071	30	3,277	17	36	84	343	0.7	4,147.8	60.9	6,196.4	91	0.5	2.3	2.8	11.
NH CAMP PENDLETON	128,097	343,702	55	5,797	30	55	119	214	0.4	2,683.1	45.3	6,294.9	106	0.5	2.2	2.2	3.
NH GUAM-AGANA	17,343	85,936	25	2,260	16	53	88	341	3.1	4,955.1	130.3	1,621.4	42	0.3	1.7	3.5	13.
NH LEMOORE	25,247	116,357	5	780	3	17	25	33	0.7	4,608.7	30.9	6,687.2	44	0.2	1.4	4.9	6.
NH OAK HARBOR	28,807	125,156	8	1,440	5	27	68	145	0.9	4,344.6	50.0	4,722.9	54	0.2	2.6	8.5	18.
NH OKINAWA	41,815	157,987	55	4,569	28	121	226	904	2.9	3,778.2	109.3	1,305.7	37	0.2	1.9	4.1	16.
NH TWENTYNINE PALMS	23,499	113,698	15	1,498	7	35	74	181	1.5	4,838.4	63.7	3,248.5	42	0.2	2.1	4.9	12.
NH YOKOSUKA	24,632	110,418	25	2,255	14	47	80	279	1.9	4,482.7	91.5	2,349.3	48	0.3	1.7	3.2	11.
NMC SAN DIEGO	253,544	760,945	245	20,855	159	206	457	599	0.8	3,001.2	82.3	3,699.3	101	0.8	2.2	1.9	2.
HSO TOTAL:	596,764	2,037,270	463	42,731	31	596	1,221	3,039	1.4	4,093.3	73.8	4,014.0	63	0.4	2.0	4.0	10.
GRAND TOTAL:	1,529,974	5,114,154	1,024	95,395	27	1,361	2,850	6,837	2.4	4,974.6	72.6	4,554.6	63	0.4	2.0	5.4	14.

*INCLUDES OUTPATIENT VISITS FOR SELECTED BRANCH CLINICS WHERE STAFFING COULD NOT BE SEPARATELY IDENTIFIED FROM ITS CORE HOSPITAL

**INCLUDES HOSPITAL CORPSMEN, CIVILIAN LPNS, CIVILIAN TECHNICIANS, CONTRACT LPNS, AND CONTRACT TECHNICIANS

TAB 3B

NAVY HEALTH CARE ANNUAL REPORT
CORE HOSPITAL PRODUCTION RATIOS BY SIZE GROUP COMMAND FOR: 2000

SIZE GROUP / FACILITY	CATCHMENT POP	OPV*	OP BEDS	ADM	ADPL	PHY	RN	LPN & TECH**	PHY/ 1000	OPV 10(	ADM/ 1000	OPV /PHY	ADM /PHY	ADPL /PHY		RN/ BED	L&T/ BED
1) MAJOR TEACHING HOSPITAL																	
NMC PORTSMOUTH	289,374	783,059	200	19,644	161	145	426	830	0.5	2,706.0	67.9	5,400.4	135.5	1.1	2.9	2.1	4.
NMC SAN DIEGO	253,544	760,945	245	20,855	159	206	457	599	0.8	3,061.2	82.3	3,699.3	101.4	0.8	2.2	1.9	2.
NNMC BETHESDA	98,419	491,231	135	9,666	96	157	359	403	1.6	4,991.2	98.2	3,128.9	61.6	0.6	2.3	2.7	3.
SIZE GROUP TOTAL	641,337	2,035,235	580	50,165	139	508	1,242	1,832	1.0	3,566.2	82.8	4,076.2	99.5	0.8	2.5	2.2	3.
2) FAMILY PRACTICE																	
NH CAMP PENDLETON	128,097	343,702	55	5,797	30	55	119	214	0.4	2,683.1	45.3	6,294.9	106.2	0.5	2.2	2.2	3
NH CHARLESTON	63,371	109,172				32	36	160	0.5	1,722.7		3,411.6			1.1	0.0	0
NH JACKSONVILLE	132,555	334,671	50	4,492	27	27	120	290	0.2	2,524.8	33.9	12,429.1	169.5	1.0	4.5	2.4	5
NH PENSACOLA	74,207	223,214	35	3,250	20	23	46	125	0.3	3,008.0	43.8	9,705.0	141.3	0.9	2.0	1.3	3
SIZE GROUP TOTAL	398,230	1,010,759	140	13,539	26	136	321	789	0.4	2,484.7	41.0	8,010.1	139.0	0.8	2.5	1.5	3
3) 98+ BEDS																	
NEWPORT HOSPITAL (CIVILIAN)		575		822	6												
NH BREMERTON	53,780	223,071	30	3,277	17	36	84	343	0.7	4,147.8	60.9	6,196	91.0	0.5	2.3	2.8	11
NH CAMP LEJEUNE	90,824	325,529	50	5,933	31	52	87	213	0.6	3,584.2	65.3	6,272	114.3	0.6	1.7	1.7	4
NH GREAT LAKES	65,907	167,011	35	1,351	23	85	94	488	1.3	2,534.0	20.5	1,964	15.9	0.3	1.1	2.7	13
NH OKINAWA	41,815	157,987	55	4,569	28	121	226	904	2.9	3,778.2	109.3	1,305	37.8	0.2	1.9	4.1	16
NH YOKOSUKA	24,632	110,418	25	2,255	14	47	80	279	1.9	4,482.7	91.5	2,349	48.0	0.3	1.7	3.2	11
TRIDENT REGIONAL MEDICAL CTR				1,610	10												
SIZE GROUP TOTAL	276,958	984,591	195	19,817	18	341	571	2,227	1.5	3,705.4	69.5	3,617	61.4		1.7	2.9	
4) 50-98 BEDS																	
NH CORPUS CHRISTI		90,542				9	12	49				10,060.			1.3	0.0	0
NH GUAM-AGANA	17,343	85,936	25	2,260	16	53	88	341	3.1	4,955.1	130.3	1,621.	42.6	0.3	1.7	3.5	13
NH ROTA	5,815	67,501	9	876	5	26	51	187	4.5	11,608.1	150.6	2,596.	33.7	0.2	2.0	5.7	20
SIZE GROUP TOTAL	23,158	243,979	34	3,136	11	88	151	577	3.8	8,281.6	140.5	4,759.	38.2	0.2	1.6	3.1	11
5) BELOW 50 BEDS																	
NH BEAUFORT	33,084	108,624	8	906		21	37	106	0.6	3,283.3	27.4	5,172.	43.1	0.4	1.7	4.6	13.
NH CHERRY POINT	35,524	141,120	15	1,292		15	41	55	0.4	3,972.5	36.4	9,471	86.7	0.3	2.7	2.7	3.
NH GUANTANAMO BAY	1,734	24,493	2	218		33	45	123	19.0	14,125.1	125.7	742	6.6	0.0	1.4	****	61.
NH KEFLAVIK	3,628	33,292	2	336		12	18	72	3.3	9,176.4	92.6	2,774	28.0	0.1	1.5	9.0	36.
NH LEMOORE	25,247	116,357	5	780		17	25	33	0.7	4,608.7	30.9	6,687	44.8	0.2	1.4	4.9	6.
NH NAPLES	8,782	48,575	7	838		28	58	204	3.2	5,531.2	95.4	1,734	29.9	0.1	2.1	8.3	29.
NH OAK HARBOR	28,807	125,156	8	1,440		27	68	145	0.9	4,344.6	50.0	4,722	54.3	0.2	2.6	8.5	18.
NH ROOSEVELT ROADS-CEIBA	24,639	69,698	8	811		63	102	338	2.6	2,828.8	32.9	1,106	12.9	0.1	1.6	****	42.
NH SIGONELLA	5,347	58,577	5	619		17	100	155	7.0	10,955.	115.8	1,570	16.6		2.7	****	31
NH TWENTYNINE PALMS	23,499	113,698	15	1,498		35	74	181	1.5	4,838.	63.7	3,248	42.8		2.1	4.9	12
SIZE GROUP TOTAL	190,291	839,590	75	8,738		288	566	1,412	3.9	6,366.	67.1	3,723	36.6		2.0	9.8	25

TAB 3B

NAVY HEALTH CARE ANNUAL REPORT
CORE HOSPITAL PRODUCTION RATIOS BY SIZE GROUP COMMAND FOR: 2000

SIZE GROUP FACILITY	CATCHMENT POP	OPV*	OP BEDS	ADM	ADPL	PHY	RN	LPN & TECH**	PHY/ 1000	OPV/ 1000	ADM/ 1000	OPV /PHY	ADM /PHY	ADPL /PHY	RN/ PHY	RN/ BED	L&T/ BED
GRAND TOTAL:	1,529,974	5,114,154	1,024	95,395	27	1,361	2,850	6,837	2.4	4,974.6	72.6	4,554.6	63.7	0.[illegible]	2.0	5.4	14.

*INCLUDES OUTPATIENT VISITS FOR SELECTED BRANCH CLINICS WHERE STAFFING COULD NOT BE SEPARATELY IDENTIFIED FROM ITS CORE HOSPITAL
**INCLUDES HOSPITAL CORPSMEN, CIVILIAN LPNS, CIVILIAN TECHNICIANS, CONTRACT LPNS, AND CONTRACT TECHNICIANS

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APPENDIX C.

SUMMARY TABLE OF MEPRS CODES OF INPATIENT WORKLOAD FOR FY 1999-2002

MEPRS CODE	MEPRS DESCRIPTION	Relative Weight Product				Total Dispositions				Total Days in Hospital			
		1999	2000	2001	2002	1999	2000	2001	2002	1999	2000	2001	2002
AA	Medical Care	17,754.28	18,996.35	18,669.33	19,766.61	15,264	16,174	16,616	17,197	59,758	64,132	64,820	66,693
AB	Surgical Care	22,156.30	21,148.23	19,725.43	18,225.69	15,400	15,338	14,380	13,467	52,730	51,991	48,724	46,216
ABA	General Surgery	9,274.63	9,983.47	9,248.59	9,475.89	7,569	8,247	7,768	9,476	25,964	28,865	26,564	27,319
ABB	Cardio/Thoracic Surgery	2,451.40	2,243.88	2,143.67	1,042.41	671	648	612	331	4,306	4,247	4,005	2,282
ABC	Surgical ICU	868.44	801.31	741.41	664.51	265	57	63	09	2065	1738	2049	1885
ABD	Neurosurgery	2,921.16	2,075.48	1,958.98	2,116.91	1,476	1,088	1,108	1,101	4,858	3,955	3,568	4,051
ABE	Ophthalmology	94.13	105.58	67.65	78.06	123	131	94	108	337	403	239	298
ABF	Oral Surgery	802.77	853.91	808.18	964.69	713	655	627	668	1,250	1,207	1,011	1,211
ABG	Otolaryngology	1,846.60	1,790.09	1,677.04	1,326.55	1,778	1,682	1,582	1,331	3,576	3,380	2,947	2,595
ABH	Pediatric Surgery	170.24	271.27	335.94	352.04	206	268	336	380	560	811	1,091	1,040
ABI	Plastic Surgery	366.28	271.27	335.94	352.04	259	281	329	214	87	1166	1652	724
ABJ	Proctology	11.24	1.97	8.61	3.27	5	1	5	4	38	12	38	7
ABK	Urology	1,770.89	1,652.93	1,522.72	1,253.18	1,560	1,521	1,308	1,111	4,350	4,107	3,622	2,955
ABL	Organ Transplant	0.00	0.00	0.00	0.00	0	0	0	0	0	0	0	0
ABM	Burn Unit	0.00	0.00	0.00	0.00	0	0	0	0	0	0	0	0
ABN	Peripheral Vascular Surgery	1,578.52	995.72	682.64	641.92	775	558	347	350	4,138	2,099	1,936	1,848
ABP	Head and Neck Surgery	0.00	0.00	0.00	0.00	0	0	0	0	0	0	0	0
ABQ	Vascular & Interventional Radiology	0.00	0.00	0.00	0.00	0	0	0	0	0	0	0	0
ABX	Surgical Care Cost Pool	0.00	0.00	0.00	0.00	0	0	0	0	0	0	0	0
ABZ	Surgical Care NEC	0.00	0.00	0.00	0.00	0	0	0	0	0	0	0	0
AC	Obstetrical and Gynecological Care	12,418.01	13,331.71	12,885.14	13,226.01	20,808	22,399	21,817	22,503	51,206	55,998	54,492	57,127
AD	Pediatrics	10,962.81	11,610.53	10,347.47	10,809.08	20,928	21,981	21,284	22,180	62,533	66,597	65,109	68,648
ADC	Neonatal ICU	4,083.39	3,799.22	4,290.33	4,219.88	1,212	1,132	1,302	1,326	17,832	16,142	19,562	20,017
ADE	Pediatric ICU	592.74	663.60	634.78	672.81	421	587	554	578	1,369	1,629	1,479	1,422
AE	Orthopedic Care	7,079.22	6,779.18	6,371.75	5,705.38	5,241	5,063	4,736	4,042	15,080	15,947	15,558	13,734
AF	Psychiatric Care	3,097	2,070	2,076	1,949	3,943	3,880	3,881	3,435	29,283	27,279	24,210	19,930
AG	Family Practice Care	4,934.44	5,367.00	5,630.61	5,657.50	10,077	10,653	11,210	11,463	23,680	25,162	29,087	26,260
AGB	Family Practice Surgery	39.46	22.77	9.16	19.36		2	11	22	128	54	17	98

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APPENDIX D

Total Health Care Support Readiness Requirement Allocation Substitution Policies for the Medical Corps as of FY 1999. Source: Deputy Director, Data Management Division, Manpower/Personnel, Bureau of Medicine and Surgery (M-14B).

MEDICAL CORPS REQUIREMENT:			MEDICAL CORPS SUBSTITUTION:			
PSUB	AQD	SPECIALTY	PSUB	AQD	SPECIALTY	SUB PCT
16R0		Internist/General	16R1		Internist/Spec	100%
			16V0		Peds/Gen	33%
			16Q0		Fam Phys/Gen	33%
			16P0		Emerg Med/Gen	33%
16R1	62C	Internist/Critical Care	16R0		Internist/Gen	33%
			16V1	62C	Peds/Critical Care	33%
			16V1	6VG	Peds/Cardiologist	33%
			16T1	62C	Neuro/ Critical Care	50%
16R1	6RG	Internist/Cardiology	16R0		Internist/Gen	33%
			16V1	6VG	Peds/Cardiologist	50%
16R1	6RL	Internist/Gastroenterology	16V1	6VL	Peds/Gastroenterology	50%
	6RN/O	Internist/Heme/Onc	16V1	6VN	Peds/Heme/Onc	33%
	6RR/62C	Internist/Pulmonary Critical Care	16V1	6VR	Peds/Pulmonary	50%
	62B	Internist/Allergy	16V1	62B	Peds/Allergy	100%
	XXX	Internist/Spec (any type)	16V1	XXX	Peds/Equivalent Spec	50%
	6RP	Internist/Inf Disease	16V1	6VP	Peds/Inf Disease	100%
			16R0		Internist/Gen	50%
			16Q0		Fam Phys/Gen	20%
			16V0		Peds/Gen	20%
16U0		UMO/General	16U0	6UM	UMO/Submarine	100%
16U1		UMO/Spec	16U1	6UM	UMO/Submarine	100%
16U1	6UE	UMO/Occ Med	16U1		UMO/Spec	100%
16Q0		Fam Phys/Gen	16Q1		Fam Phys/Spec	100%
			16R0		Internist/Gen	50%
			16R1		Internist/Spec	20%
			16P0		Emerg Med/Gen	50%
			16V0		Peds/Gen	20%
			16V1		Peds/Spec	10%
16V0		Peds/Gen	16V1		Peds/Spec	100%
16P0		Emerg Med/Gen	16R0		Internist/Gen	20%
			16R1		Internist/Spec	20%
			16Q0		Fam Phys/Gen	33%
			16Q1		Fam Phys/Spec	20%
			16V0		Peds/Gen	20%

MEDICAL CORPS REQUIREMENT:			MEDICAL CORPS SUBSTITUTION:			
PSUB	AQD	SPECIALTY	PSUB	AQD	SPECIALTY	SUB PCT
			16V1	62C	Peds/Critical Care	10%
15A0		Aviation Med/Gen	15A1		Aeromed/Spec	100%
16X0		Psych/Gen	16X1		Psych/Spec	100%
16Y0		Radiology/Gen	16Y1	6YD	Diag Radiol	100%
15K0		Prev Med/Gen	15A1		Aeromed/Spec	100%
			15K2		Occ Med/Gen	100%
15C0		Gen Sgn	15C1		Sgn/Spec	100%
			15E0		Obster-Gyn/Gen	33%
			15E1	6EG/6EJ	Obster-Gyn/Spec	50%
			15J0		Urology/ Gen	33%
			15J1		Urology/Spec	33%
15C1		Sgn/Spec	15C0		Gen Sgn	33%
			15E1	6EG/6EJ	Obster-Gyn/Spec	50%
			15J1		Urologist/Spec	20%
15E0		Obster-Gyn/Gen	16Q1	6Qf	Fam Phsy/OB	33%
15H0		Ortho/Gen	15H1		Ortho/Spec	100%
15J0		Urology/ Gen	15J1		Urology/Spec	100%
			15E1	6EJ	Obster-Gyn/Spec	50%
15B0		Anesthesia/Gen	15B1		Anesthesia/Spec	100%
15D0		Neurosurgery/Gen	15D1		Neurosurgery/Spec	100%
15G0		Opthalmology/Gen	15G1		Opthalmology/Spec	100%
15I0		Otolaryngology/Gen	15I1		Otolaryngology/Spec	100%
			15C1	6CJ	Plastic Sgn	20%
15L0		PM&R	15L1		PM&R/Spec	100%
15M0		Pathology/Gen	15M1		Pathology/Spec	100%
16N0		Dermatology/Gen	16N1		Dermatology/Spec	100%
			16Q0		Fam Phys/Gen	33%
			16R0		Internist/Gen	33%
			16V0		Peds/Gen	33%
16T0		Neurology/Gen	16T1		Neuro/Spec	100%
			15L1		PM&R/Gen or Spec	50%
			16Q0		Fam Phys/Gen	33%
			16R0		Internist/Gen	33%
			16V0		Peds/Gen	33%
16W0		Nuc Med/Gen	16W1		Nuc Med/Spec	100%

Total Health Care Support Readiness Requirement Allocation Substitution Policies for the Nurse Corps as of FY 1999. Source: Deputy Director, Data Management Division, Manpower/Personnel, Bureau of Medicine and Surgery (M-14B).

If the requirement		You may substitute:		
PSUB	Specialty	PSUB	Specialty	SUBPC
1900	General Nurse		ALL PLATFORMS:	
		1901	Nursing Administrator	100%
		1903	Nursing Education	100%
		1920	Maternal-Child Nurse	100%
		1922	Pediatric Nurse	100%
		1930	Psychiatric Nurse	100%
		1940	Community Health Nurse	100%
		1974	Pediatric Nurse Practitioner	100%
		1976	Family Nurse Practitioner	100%
		1980	OB/GYN Nurse Practitioner	100%
		1981	Nurse Midwife	100%
		1806	Health Care Administrator	100%
		0033	Manpower	100%
1910	Medical-Surgical Nurse		ALL PLATFORMS:	
		1901	Nursing Administrator	100%
		1903	Nursing Education	100%
		1920	Maternal-Child Nurse	100%
		1922	Pediatric Nurse	100%
		1930	Psychiatric Nurse	100%
		1940	Community Health Nurse	100%
		1974	Pediatric Nurse Practitioner	100%
		1976	Family Nurse Practitioner	100%
		1980	OB/GYN Nurse Practitioner	100%
		1981	Nurse Midwife	100%
		1806	Health Care Administrator	100%
		0033	Manpower	100%
		0037	Education & Training Mgmt	100%
1945	ER/Trauma Nurse		OCONUS AUGMENT	
			(no substitutions other platforms)	
		1910	Medical-Surgical Nurse	40%
		1960	Critical Care Nurse	100%
		1974	Pediatric Nurse Practitioner	40%
		1976	Family Nurse Practitioner	40%
		1980	OB/GYN Nurse Practitioner	40%
		1981	Nurse Midwife	40%
1960	Critical Care Nurse		T-AH (not more than 25% of total 1960's)	

If the requirement		You may substitute:		
		1910	Medical-Surgical Nurse	25%
		1974	Pediatric Nurse Practitioner	25%
		1976	Family Nurse Practitioner	25%
		1980	OB/GYN Nurse Practitioner	25%
		1981	Nurse Midwife	25%
1960	Critical Care Nurse		Fleet Hospital (not more than 40% of total	
		1910	Medical-Surgical Nurse	40%
		1974	Pediatric Nurse Practitioner	40%
		1976	Family Nurse Practitioner	40%
		1980	OB/GYN Nurse Practitioner	40%
		1981	Nurse Midwife	40%
1960	Critical Care Nurse		USMC Augment (not more than 40% of total	
		1910	Medical-Surgical Nurse	40%
		1974	Pediatric Nurse Practitioner	40%
		1976	Family Nurse Practitioner	40%
		1980	OB/GYN Nurse Practitioner	40%
		1981	Nurse Midwife	40%
1960	Critical Care Nurse		CRTS No SUBSTITUTIONS	
1960	Critical Care Nurse		OCONUS (not more than 40% of total 1960's)	
		1910	Medical-Surgical Nurse	40%
		1974	Pediatric Nurse Practitioner	40%
		1976	Family Nurse Practitioner	40%
		1980	OB/GYN Nurse Practitioner	40%
		1981	Nurse Midwife	40%
1972	Nurse Anesthetist		No Substitutions Any Platform	

APPENDIX E

Mapping and aggregation of old SSP1 codes to new codes and General Category for Medical Corps

TITLE	DESCRIPTION	SSP1	TITLE	AQD	OLD SSP1	General Category Code
Flight Surgeon	Aviation Medicine	15A0			1602	15A0
Preventive Medicine Officer Aerospace	Aerospace Medicine	15A1			1624	15A1
Anesthesiologist	Anesthesia, General	15B0			1540	15B
	Anesthesia, Subspecialty	15B1			1541	
General Surgeon	Surgery, General	15C0			1500	15C
	Surgery, Subspecialty	15C1				
	Thoracic & CDV Surgeon		Surgery Subspecialty Cardio thoracic Surgery	6CD	1507	
	C/Rectal Surgeon		Surgery Colon & Rectal Surgery	6CE	1501	
	Pediatric Surgeon		Surgery Pediatric Surgery	6CH	1506	
	Peripheral Vascular Surgeon		Surgery Peripheral Vascular Surgery	6CI	1503	
	Plastic Surgeon		Surgery Plastic Surgery	6CJ	1520	
	Surgical Oncology		Surgery Oncology	6CL	1560	
	Trauma		Surgery Trauma Surgeon	6CM	1561	
Neurosurgeon	Neurological Surgery, General	15D0			1515	15D
	Neurological Surgery, Subspecialty	15D1				
	Complex Spinal Neurosurgery				1570	
	Skull based Neuro Surgery		Neurological Surgery Complex Spinal Neuro- Surg	6DD	1514	
Obstetrician/Gynecologist	Obstetrics/Gynecology General	15E0			1510	15E
	Obstetrics/Gynecology Subspecialty	15E1				
	Gynecologic Oncology				1562	

TITLE	DESCRIPTION	SSP1	TITLE	AQD	OLD SSP1	General Category Code
	Maternal Fetal Medicine		OB/GYN Gynecologic Oncology	6EG	1551	
	Reproductive Endocrinology		OB/GYN Maternal Fetal Medicine	6EH	1512	
General Medical Officer	General Medicine	15F0			1600	15F
Ophthalmologist	Ophthalmology, General	15G0			1524	
	Ophthalmology, Subspecialty	15G1				
	Comprehensive Ophthalmologist				1580	
	Corneal and External Eye Dz		Ophthalmology Subspecialty Comprehensive	6GD	1526	
	Glaucoma		Ophthalmology Subspecialty Cornea & External Disease	6GE	1530	
	Surgical Neuro-Ophthalmology		Ophthalmology Subspecialty Glaucoma	6GF	1578	15G
	Oculoplastics		Ophthalmology Subspecialty Neuro-Opthalmology/Surgery	6GG	1529	
	Ophthalmologic Pathology		Ophthalmology Subspecialty Oculoplastics	6GH	1585	
	Retinal Surgery		Ophthalmology Subspecialty Ophthalmic Pathology Subspecialty Surgery	6GI	1527	
Orthopedic Surgeon	Orthopedic Surgery, General	15H0			1516	15H
	Orthopedic Surgery, Subspecialty	15H1				
	Trauma Surgery				1545	
	Hand Surgery		Orthopedic Surgery Subspecialty Faculty Development	62D	1517	
	Foot and Ankle Surgery		Orthopedic Surgery Subspecialty Hand Surgery	62F	1550	
	Musculoskeletal Oncology		Orthopedic Surgery Subspecialty Foot & Ankle Surgery	6HD	1559	

TITLE	DESCRIPTION	SSP1	TITLE	AQD	OLD SSP1	General Category Code
	Pediatrics Orthopedics		Orthopedic Surgery Subspecialty Orthopedic Oncology	6HF	1519	
	Spine Surgery		Orthopedic Surgery Subspecialty Pediatric Orthopedic Surgery	6HG	1518	
	Sports Medicine / Surgical		Orthopedic Surgery Subspecialty Spine Surgery	6HH	1535	
	Total Join		Orthopedic Surgery Subspecialty Sports Surgery	6HI	1513	
Otolaryngologist	Otolaryngology, General	15I0			1522	
	Otolaryngology, Subspecialty	15I1	Otolaryngology Subspecialty Faculty Development	26D		
	Facial Plastic and Reconstructive Surgery				1521	15I
	Head and Neck Surgery		Otolaryngology Subspecialty Facial Plastics & Reconstructive	6ID	1590	
Urologist	Urology, General	15J0			1508	
	Urology, Subspecialty	15J1				
	Urology Fellowship				1563	15J
	Pediatric Urology		Urologic Subspecialty Pediatric Urology	6JG	1509	
Preventive Medicine Officer Preventive Health	Preventive Medicine, General	15K0			1628	15K
Preventive Medicine Officer Occupational	Occupational Medicine, General	15K2			1626	
Physical Medicine and Rehabilitation	Physical Medical and Rehabilitation, General	15L0				
	Physical Medical and Rehabilitation, Subspecialty	15L1				15L
	Physical Medicine and Rehab.				1634	
Pathologist	Pathology General	15M0			1680	15M
	Pathology Subspecialty	15M1				
	Ophthalmic Pathology				1690	

TITLE	DESCRIPTION	SSP1	TITLE	AQD	OLD SSP1	General Category Code
	Anatomic Pathology		Pathology Subspecialty Anatomic Pathologist	6MB	1682	
	Clinical Pathology		Pathology Subspecialty Clinical Pathologist	6MC	1681	
	Cytopathology		Pathology Subspecialty Cytopathologist	6MF	1691	
	Dermatopathology		Pathology Subspecialty Dermatopathologist	6MG	1684	
	Forensic Pathology		Pathology Subspecialty Forensic Pathologist	6MH	1685	
	Hematopathology		Pathology Subspecialty Hemato-Pathologist	6MI	1686	
	Immunopathology		Pathology Subspecialty Immuno-Pathologist	6MJ	1688	
	Neuropathology		Pathology Subspecialty Neuro-Pathologist	6MK	1683	
Dermatologist	Dermatology, General	16N0			1618	16N
	Dermatology, Subspecialty	16N1			1619	
Emergency Medicine	Emergency Medicine, General	16P0			1616	16P
	Emergency Medicine, Subspecialty	16P1			1635	
Family Practitioner	Family Medicine General	16Q0			1610	16Q
	Family Medicine Subspecialty	16Q1				
	Family Practice Faculty Devel.		Family Medicine Subspecialty Adolescent Medicine Specialist	62A	1609	
	Family Practice Obstetrics		Family Medicine Subspecialty Faculty Development	62D	1640	
Internist	Internal Medicine, General	16R0			1612	16R
	Internal Medicine, Subspecialty	16R1				

TITLE	DESCRIPTION	SSP1	TITLE	AQD	OLD SSP1	General Category Code
	Adolelescent Medicine				1644	
	Allergy/Immunology		Internal Medicine Subspecialty Adolescent Medicine Specialist	62A	1652	
	Critical Care Medicine		Internal Medicine Subspecialty Allergy/Immunologist	62B	1699	
	Imnunology		Internal Medicine Subspecialty Critical Care	62C	1653	
	Cardiology		Internal Medicine Subspecialty Allergy Immunologist	6RF	1643	
	Cardiac Electrophysiology		Internal Medicine Subspecialty Cardiology General	6RG	1659	
	Interventional Cardiology		Internal Medicine Subspecialty Cardiac Electrophysiologist	6RH	1658	
	Endocrinoloby/Metabolism		Internal Medicine Subspecialty Interventional Cardiologist	6RI	1654	
	Gastroenterology		Internal Medicine Subspecialty Endocrinologist	6RK	1647	
	Hematology		Internal Medicine Subspecialty Gastroenterologist	6RL	1648	
	Medical Oncology		Internal Medicine Subspecialty Hematologist	6RN	1649	
	Infectious Disease		Internal Medicine Subspecialty Oncologist	6RO	1641	
	Nephrology		Internal Medicine Subspecialty Infectious Disease Specialist	6RP	1655	
	Pulmonary Disease		Internal Medicine Subspecialty Nephrology	6RQ	1642	
	Rheumatology		Internal Medicine Subspecialty Pulmonologist	6RR	1656	

TITLE	DESCRIPTION	SSP1	TITLE	AQD	OLD SSP1	General Category Code
	Tropical Medicine		Internal Medicine Subspecialty Rheumatologist	6RS	1645	
Neurologist	Neurology, General	16T0			1620	16T
	Neurology, Subspecialty	16T1	Neurology Subspecialty Faculty Development	62D		
	Child Neurology				1621	
	Medical Neuro-Ophthalmology		Neurology Subspecialty Child Neurologist	6TD	1668	
	Neurophysiology		Neurology Subspecialty Medicine Neuro-Ophthalmologist	6TF	1669	
Undersea Medical Officer	Undersea Medicine, General	16U0			1605	16U
	Undersea Medicine, Subspecialty	16U1				
	Undersea Occupational Med.				1606	
	Hyperbaric Medicine		Undersea Medicine Subspecialty Undersea Occupation Medicine	6UE	1632	
Pediatrician	Pediatrics, General	16V0			1614	16V
	Pediatrics, Subspecialty	16V1				
	Developmental Pediatrics				1611	
	Pediatric Intensivist				1617	
	Pediatric, Gastroenterology		Pediatrics Subspecialty Pediatric Intensivist/Critical Care	6VI	1661	
	Pediatric Cardiology		Pediatrics Subspecialty Pediatric Gastroenterologist	6VL	1660	
	Neonatology		Pediatrics Subspecialty Pediatric Hematologist Oncologist	6VN	1615	
Nuclear Medicine Specialist	Nuclear Medicine	16W0			1678	16W
	Nuclear Radiologist				1673	

TITLE	DESCRIPTION	SSP1	TITLE	AQD	OLD SSP1	General Category Code
Psychiatrist	Psychiatry, General	16X0			1622	16X
	Psychiatry, Subspecialty	16X1				
	Child Psychiatry				1623	
	Forensic Psychiatry		Psychiatry Subspecialty Child/Adolescent Psychiatry Subspecialty	6XH	1698	
Radiologist (Diagnostic)	Diagnostic Radiology	16Y0			1670	16Y
	Radiology, Subspecialty	16Y1				
	Imaging Radiology				1675	
	Neurologic Radiology		Radiology Subspecialty Imaging	6YD	1672	
	Pediatric Radiology		Radiology Subspecialty Neuro-Radiology Subspecialty	6YF	1671	
Radiologist (Therapeutic)	Radiation Oncology	16Y2				
	Theraputic Radiology				1676	
	Interventional Radiology		Radiology Subspecialty Interventional/Vascular Rad	6YE	1677	
Executive Medicine	Executive Medicine	1806			1806	1806

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APPENDIX F

Listing of Subspecialty Codes used for Nurse Corps data.

Subspecialty Title	Numeric Code
Professional Nursing	1900
Nursing/Healthcare Administration	1901
Education	1903
Quality Assurance	1907
Medical / Surgical Nursing	1910
Medical Nursing	1911
Surgical Nursing	1912
Cardiovascular Nursing	1913
Oncology Nursing	1916
Perinatal Nursing	1920
Obstetrical Nursing	1921
Pediatric Nursing	1922
Newborn Nursing	1923
Psychiatric Nursing	1930
Orthopedic Nursing	1935
Ambulatory Care Nursing	1940
Emergency/Trauma Nursing	1945
Perioperative Nursing	1950
Critical Care Nursing	1960
Surgical Intensive Care Nursing	1961
Medical Intensive Care Nursing	1962
Coronary Care Nursing	1963
Neonatal Intensive Care Nursing	1964

Subspecialty Title	Numeric Code
Post-Anesthesia Care Nursing	1968
Nurse Anesthesia	1970
Pediatric Nurse Practitioner	1974
Adult Health Nurse Practitioner	1975
Obstetrical and Gynecological Nurse Practitioner	1980
Nurse Midwife	1981
Plans, Operations and Medical Intelligence	1805
Health Care Management	1806
Management	0030
Manpower, Personnel, and Training Analysis	0033
Education and Training Management	0037
Computer Technology Systems Management	0095

APPENDIX G

		END STRENGTH of Medical Corps by Specialty															
General Category Codes	Description	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1990 - 2002	% Change 1992 - 2001	% Change 1999 - 2002
15A0	FLT SURG	321	315	359	362	341	332	302	282	272	277	293	290	287	-10.59%	-19.22%	3.61%
15A1	Aerospace	51	56	54	49	56	62	65	70	84	105	90	86	91	78.43%	59.26%	-13.33%
15A	FLT/Aerospace	372	371	413	411	397	394	367	352	356	382	383	376	378	1.61%	-8.96%	-1.05%
15B	Anesth	224	236	245	247	233	207	205	206	193	194	167	157	171	-23.66%	-35.92%	-11.86%
15C	Gen Surg	258	263	269	265	254	251	239	232	222	224	213	223	239	-7.36%	-17.10%	6.70%
15D	Neurosurg	27	27	26	26	25	27	28	21	19	17	19	23	26	-3.70%	-11.54%	52.94%
15E	OB/GYN	177	174	164	163	163	159	164	176	180	188	173	169	172	-2.82%	3.05%	-8.51%
15F	GMO	800	889	858	877	882	824	791	744	759	734	734	757	696	-13.00%	-11.77%	-5.18%
15G	Opth	86	83	83	79	81	89	89	86	85	81	78	79	81	-5.81%	-4.82%	0.00%
15H	Ortho	177	201	201	214	199	167	159	157	153	158	160	174	181	2.26%	-13.43%	14.56%
15I	Oto	98	98	99	102	93	95	91	94	87	82	78	75	80	-18.37%	-24.24%	-2.44%
15J	Uro	68	70	74	72	65	61	65	59	56	52	53	49	51	-25.00%	-33.78%	-1.92%
15K	Prevmed	91	87	81	78	77	78	83	85	91	92	98	105	103	13.19%	29.63%	11.96%
15L	Re hab	3	4	3	5	5	6	6	6	7	9	11	10	10	233.33%	233.33%	11.11%
15M	Path	131	139	137	124	128	120	116	115	107	107	103	97	94	-28.24%	-29.20%	-12.15%
16N	Derm	67	67	70	73	76	64	59	59	62	61	60	57	56	-16.42%	-18.57%	-8.20%
16P	ER	88	101	103	115	127	121	131	138	152	153	170	182	176	100.00%	76.70%	15.03%
16Q	FP	336	350	339	338	340	369	377	392	426	467	496	518	529	57.44%	52.80%	13.28%
16R	In	448	449	447	437	425	416	417	407	408	399	378	373	374	-16.52%	-16.55%	-6.27%
16T	Neur olog	39	37	37	43	45	45	40	43	40	37	37	33	29	-25.64%	-10.81%	-21.62%
16U	UMO	118	117	122	111	101	95	96	98	97	97	96	103	104	-11.86%	-15.57%	7.22%
16V	PED	195	191	182	184	173	229	233	225	217	221	239	234	245	25.64%	28.57%	10.86%
16W	Nuc MED	13	13	10	11	11	11	11	11	11	10	9	9	8	-38.46%	-10.00%	-20.00%
16X	Psyc	157	159	162	162	158	156	150	141	139	140	137	137	148	-5.73%	-15.43%	5.71%
16Y	Rad	193	206	200	199	198	183	178	167	156	161	151	143	144	-25.39%	-28.50%	-10.56%
1806	Exec	0	0	0	0	2	3	6	4	5	7	8	8	2			-71.43%
	E/S	4166	4332	4325	4336	4258	4170	4101	4018	4028	4073	4051	4091	4097	-1.66%	-6.34%	0.59%

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APPENDIX H

		End Strength of Nurse Corps by Primary Subspecialty															
	Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1990 - 2002	% Change 1992 - 2001	% Change 1999 - 2002
Description	SSP1 Code																
Unknown	0		2					4	4			2					
Management	30	11	10	7	5	4	4	10	9	11	12	15	18	18	63.64%	157.14%	50.00%
Manpower	33	7	8	9	9	9	8	45	45	45	46	46	48	51	628.57%	433.33%	10.87%
Unknown	36	2	2	2	1			1	1	2	38	40	44	46			21.05%
Ed/Training	37	29	31	42	54	54	49	21	22	23							
Computer	95	2	1	1	1	1	1										
Unknown	934	22	2	18	1	1											
Unknown	1500	1															
Unknown	1524	1															
Unknown	1800	1															
Executive	1806	4	16		20	23	20										
Prof. Nsg	1900	1134	1092	1135	1091	985	1192	1209	1312	1305	1231	1147	1167	1152	1.59%	2.82%	-6.42%
Admin. Nsg	1901	140	161	158	150	125	112	113	111	125	137	134	131	113	-19.29%	-17.09%	-17.52%
Unknown	1902									1							
Education	1903	97	88	85	83	95	88	96	87	80	72	64	58	55	-43.30%	-31.76%	-23.61%
Unknown	1904	1													-100.00%		
QA	1907	16	18	23	22	18	16	14	15								
Med/Surg	1910	54	64	95	103	116	116	120	115	197	190	185	197	205	279.63%	107.37%	7.89%
Med Nsg	1911	36	43	50	44	39	33	23	14								
Surg Nsg	1912	64	75	87	78	92	71	45	34	1							
Cardio Nsg	1913	13	11	5	6	6	8	9	8								
Oncology	1916	9	15	16	22	17	13	10	9		1						
Perinatal	1920	13	15	14	12	15	15	16	20	138	138	140	146	150	1053.85%	942.86%	8.70%
OB	1921	87	86	90	116	135	117	113	97								
Peds	1922	36	40	53	57	45	38	33	33	43	41	44	43	40	11.11%	-18.87%	-2.44%
Newborn	1923	12	17	12	26	25	26	20	15								
Psych	1930	70	76	69	67	64	56	56	48	49	52	55	56	62	-11.43%	-18.84%	19.23%
Orthopedics	1935	8	12	12	15	14	11	7	6								
Ambulatory	1940	166	200	239	261	262	255	261	235	72	68	68	67	69	-58.43%	-71.97%	1.47%
ER/Trauma	1945	161	162	147	145	156	143	142	137	154	145	165	164	180	11.80%	11.56%	24.14%
Perioperative	1950	245	256	240	236	248	255	255	257	249	243	240	235	268	9.39%	-2.08%	10.29%
CC Nsg	1960	202	210	275	307	305	297	272	267	333	376	422	411	386	91.09%	49.45%	2.66%
SICU	1961	51	51	36	30	19	15	10	5								
MICU	1962	21	12	10	4	1	1										
CCU	1963	53	46	30	17	11	7	3	2								
NICU	1964	31	25	24	29	23	20	24	21	23	20	22	20	23	-25.81%	-16.67%	15.00%
Post-Anesth.	1968	13	16	24	24	19	16	17	18								
Anesthes.	1972	158	167	180	177	175	179	178	188	187	185	184	191	182	15.19%	6.11%	-1.62%
PNP	1974	21	20	16	21	27	29	32	32	34	31	32	30	30	42.86%	87.50%	-3.23%
Adult NP	1975	2	1	1	1	1	1										
FNP	1976	44	59	66	61	53	59	64	68	68	70	69	74	78	77.27%	12.12%	11.43%
OB/GYN NP	1980	10	7	6	9	8	14	15	18	19	20	21	22	22	120.00%	266.67%	10.00%
NW	1981	10	17	24	26	28	28	28	30	30	27	27	25	26	160.00%	4.17%	-3.70%
	Total	3058	3134	3301	3331	3219	3313	3266	3283	3189	3143	3122	3147	3156	3.20%	-4.67%	0.41%

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APPENDIX I

2nd Level MEPRS Code Workload Summary using Simple RVU for All Same Day Surgery

(Ambulatory Procedure Visits – B**5)

		1999	2000	2001	2002	Percent Change 1999-2002
BA	**Medical Care**	15034.76	15915.03	28495.32	39138.25	160.32%
BB	**Surgical Care**	178414.66	163043.47	153074.2	178692.15	0.16%
BC	**OB/GYN**	26284.45	26994.21	26060.76	23900.46	-9.07%
BD	**Pediatric Clinic**	301.38	342.04	291.99	469.88	55.91%
BE	**Orthopedics**	95944.08	99565.25	93745.8	102293.28	6.62%
BG	**Family Practice**	97.19	43.71	19.49	79.87	-17.82%

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APPENDIX J

Year	Specialty Clinic	E/S of Surgical Specialty	Ratio of Work per Specialty Surgeon	% Change in Ratio from 1999 - 2002
	Neurosurgery Clinic (BBC5)	**15D**		
1999	5600.89	17	329.46	
2000	6430.03	19	338.42	
2001	1689.17	23	73.44	
2002	2932.88	26	112.80	
				-65.76%
	Ophthalmology Clinic (BBD5)	**15G**		
1999	33510.58	81	413.71	
2000	26042.24	78	333.87	
2001	24310.15	79	307.72	
2002	26599.43	81	328.39	
				-20.62%
	Otolaryngology Clinic (BBF5)	**15I**		
1999	51928.67	82	633.28	
2000	49068.39	78	629.08	
2001	45438.74	75	605.85	
2002	45272.06	80	565.90	
				-10.64%
	Urology Clinic (BBI5)	**15J**		
1999	18210.67	52	350.21	
2000	17414.01	53	328.57	
2001	14972.95	49	305.57	
2002	19336.8	51	379.15	
				8.27%

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